A CHILTON PUBLICATION

the Iron Age

E NATIONAL METALWORKING WEEKLY March 18, 1954

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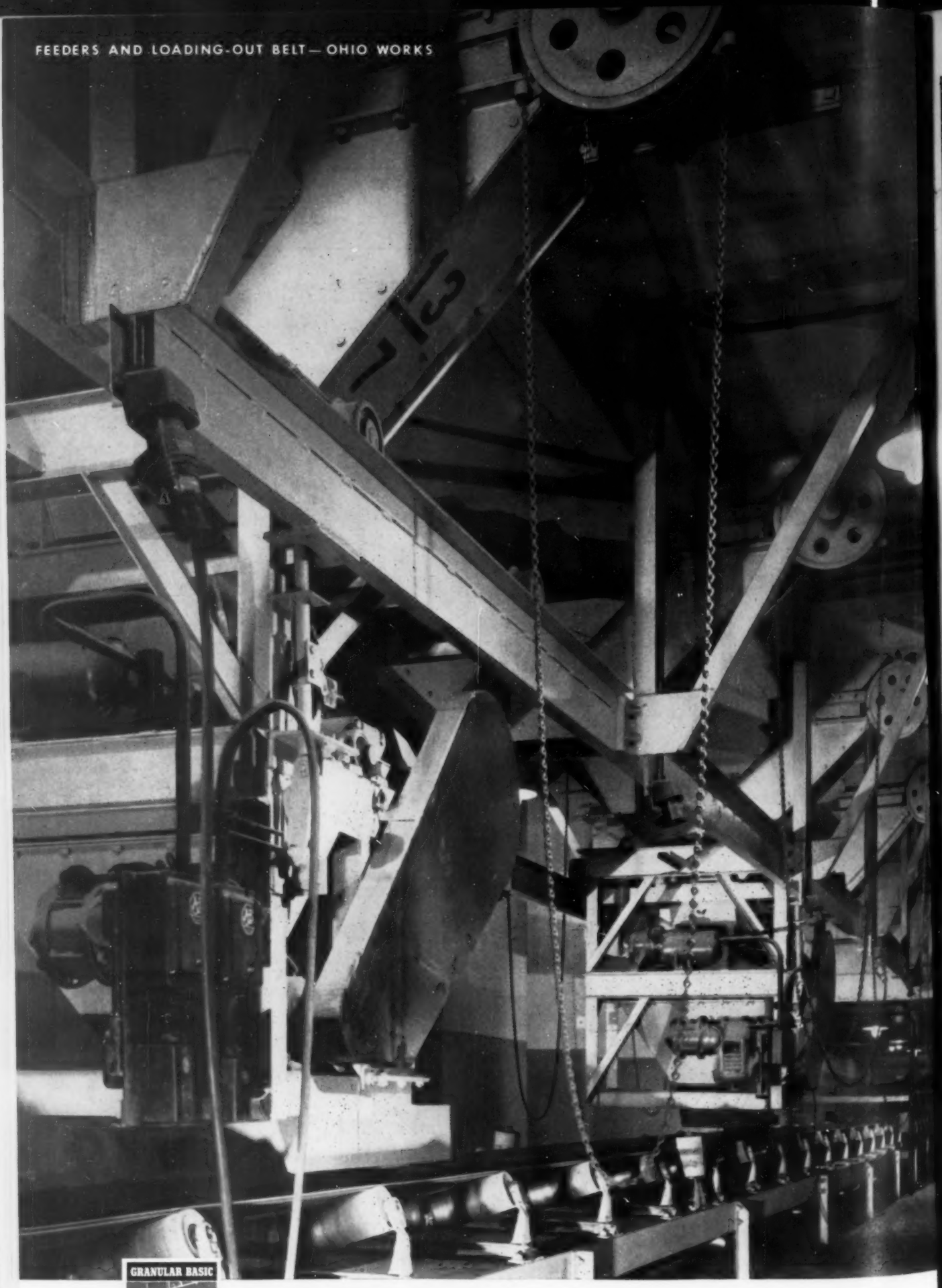

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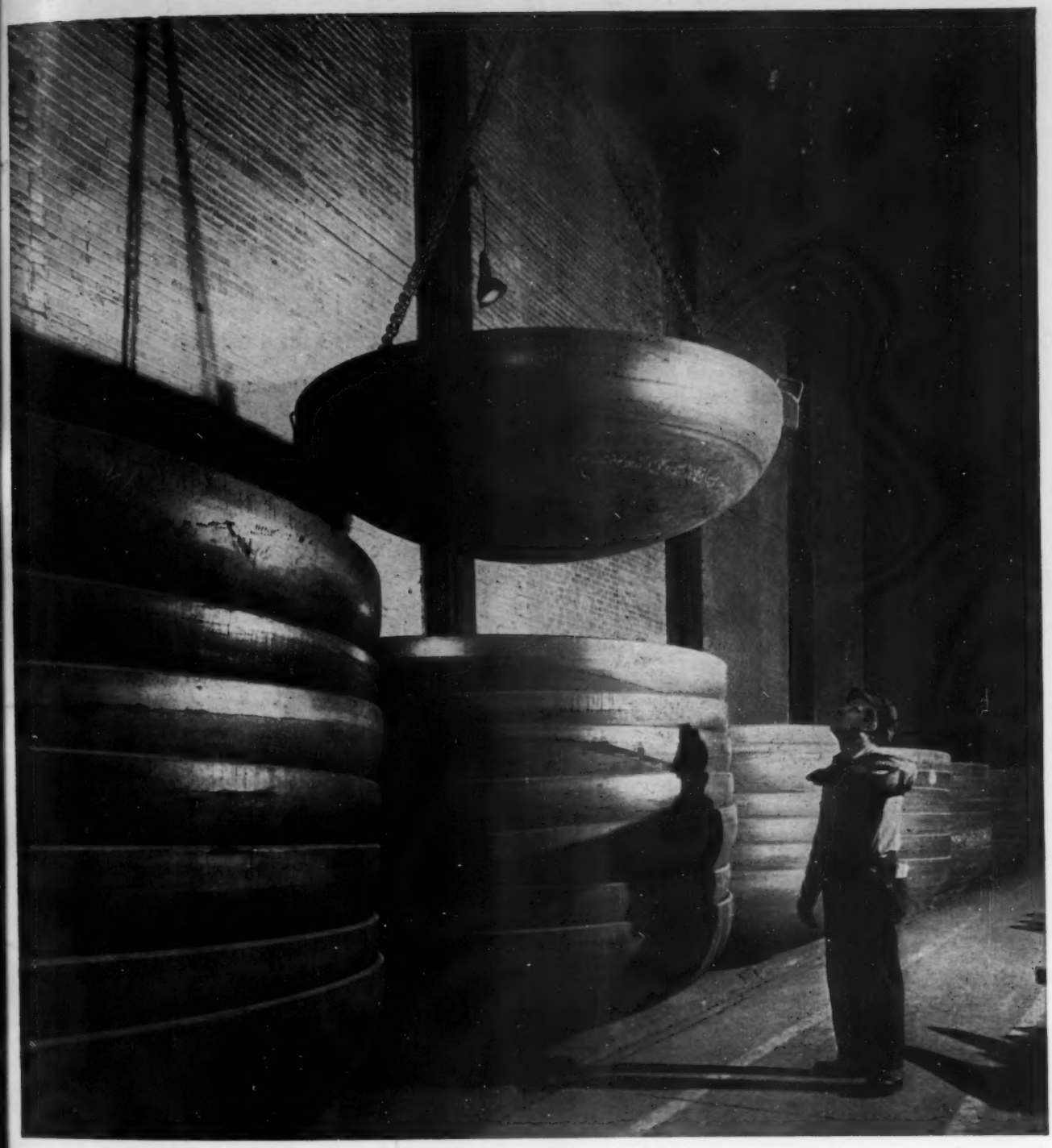

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the Iron Age

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DIGEST of t

NEWS DEVELOPMENTS

NEW PRODUCTS PACE DIECASTING GROWTH — P. 73
The diecasting beanstalk last year almost reached the record height of 1950 and did send a few shoots to all-time highs. But the plant's due for some pruning and some new growth in 1954. Automatic transmissions last year pushed aluminum diecasting to a new top, may keep it there in '54.

FULL USE OF CARBIDES IS STILL TO COME — P. 80
Biggest challenge to the cemented carbides producers today is to educate industry to the full potential of their product's value, says Philip M. McKenna, president of Kennametal. Productive capacity is two to three times current demand and raw materials are ample—but new designs must be used.

FORESEE NO BIG CHANGE IN DEFENSE PLANS — P. 86
Pentagon feels the major military snarls have been untangled, leaving the way open for skilled management of a going operation. This is indicated by naming of Navy Secretary Robert Anderson to post of Deputy Defense Secretary. Roger Kyes was a production expert; his successor is an administrator.

BARGAIN CAR STRESSES BASIC TRANSPORT — P. 90
New Nash Metropolitan is American car with British accent. Production economies dictated manufacture in England. The $1445-car eliminates frills, won't replace the family buggy—but is designed as a supplement. Stress is on basic transportation at the minimum price, maximum economy.

AUTOS BYPASSED ON EXCISE TAX CUTS — P. 95
Excise tax reductions will provide a real lift for sales of more than a score of products and services. But the automotive industry isn't in line for any direct benefits. How come? Detroit didn't come right out and demand tax reduction, and therefore Congress isn't voting them any for the current year.

LABOR SECRETARY SOFTENS JOBLESS RISE — P. 103
Despite 300,000 drop in nonfarm employment in February, Labor Secretary Mitchell sees signs increase in unemployment is slowing. But figures issued later in the week by Commerce Dept. make unemployment problem seem more critical. February jobless rise estimated at 3.671 million. How to get a free TV plug.

the Week in Metalworking

ENGINEERING & PRODUCTION

DUCTILE IRON MAKES GOOD ON TOUGH JOBS—P. 133
Ductile iron's toughness, impact resistance, machinability and good wear qualities have made it a preferred material for many of industry's toughest applications. Close control is a must in all foundry operations. Excellent castability of ductile iron simplifies pouring to difficult contours.

HOW TO INCREASE POWER PLANT EFFICIENCY—P. 138
Modern high-pressure steam installations have given substantial savings in power plants operated by steel mills. Studies have shown ways to use more byproduct fuels and reduce electric power requirements. Surveys of four steel plants using by-product and purchased fuels showed substantial savings were made.

LEAD-TIN COAT AIDS STRIP WORKABILITY — P. 140
Strip steel, electrolytically precoated with a lead-tin alloy, is more workable. The coating acts as a lubricant, reduces die wear, and reduces post-fabrication plating costs. The coating has excellent soldering properties and no chloride or acid flux is required. Corrosion resistance is good.

SHEAR-BALER CAN SPEED SCRAP HANDLING — P. 143
A new German built steel scrap baler handles bulky scrap quickly, uniformly and efficiently. Small bales weighing 60 lb, ideal for cupola charging, can be made. A single press can turn out 3 bales in 2 minutes. One operator, handling two presses, can process about 86 tons of scrap every 16 hours.

WHAT IS ZIRCONIUM'S ENDURANCE LIMIT? — P. 146
Zirconium does not have a clearly defined endurance limit, recent studies have shown. This conclusion is based on a study of zirconium's little known fatigue properties. Specimens of crystal bar zirconium were tested under repeated stress at room temperature. Aim: To improve zirconium alloys.

NEXT WEEK—PRETREATED SHEETS RAISE QUALITY
Mill treated sheet and strip, available in many widths and gages, may help you improve product quality and cut production costs. Weights of coatings are varied to specific requirements. Proper cleaning, uniform coating, better paint surfaces are assured. Surfaces wear longer and corrosion protection is improved.

MARKETS & PRICES

U. S. FACES TOUGHER EXPORT SELLING — P. 75
Export managers, orphans when domestic business is high, are due for considerable increased attention during 1954. Six months ago, foreign competition began to stiffen in overseas markets for American goods. Offers of 30 pct price cuts are heard. Machinery, TV sets, farm implements have good chances.

PLASTICS BIDDING FOR STEEL SHEET MARKET — P. 77
Plastic sheets may follow the pattern of plastic pipe in winning a market. There are now about 20 firms pressing out plastic sheets, about 6 specializing in rigid polyvinyl chloride. Newest entry is Seiberling Rubber Co. which is building $600,000 plant with initial capacity of 1.5 million lb sheets per year.

EXECUTIVES MAP RECESSION DEFENSES — P. 79
A good part of today's apprehension may be based on people talking about someone else's business, AMA convention hears. Spirited panel discussions held on sales, profit sharing, effective delegation of responsibility. All endorsed a thorough analysis of company operations, trimming the sales fat.

BOOST OUTPUT OF GRAIN ORIENTED STEEL — P. 83
Brisk demand for grain oriented silicon steel and prospects of a steady market through 1960 promises to bring new producers into the field and create highly competitive conditions within the next 2 years, maybe sooner. U. S. Steel plans 35,000-ton annual capacity. Others are studying the field.

STEEL CUSTOMERS CONTINUE PARING STOCKS—P. 167
Steel consumers who started shaving inventories last summer are now slashing them to the bone. Some who originally planned to reduce steel stocks to a 50 or 60-day supply are now aiming at 30 days. Everywhere consumers reflect the opinion that when they need the steel an abundant supply will be available.

OUTLOOK BRIGHTENS AS ZINC PRICE RISES — P. 170
Is this the turning point for lead and zinc? Both rose in price last week and demand is fairly good when compared to recent months. With zinc output on the decline and demand going up, it seems a good bet that smelters may soon begin trimming their burdensome stocks of slab zinc.

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The Self-Made Man

MAYBE we are losing an old-fashioned type of American. This may not affect us too much but it will leave us with a feeling of nostalgia. It will be like losing an old friend or looking through the family album because today things seem to be different.

When very young our man was always busy. There were two things he had learned which were to be his way of life: hard work and thrift. These were to be his basic drive as he delivered his papers or worked in the local store.

What little spare time he had often found him reading Horatio Alger, Frank Merriwell or Nick Carter. From these books he learned that being right and honest was its own reward. Often during this stage he came to know people who told him their philosophy of life. Maybe they told him about the dangers of being lazy; or how to get ahead.

At this time too a man's teacher or older friend made a deep impression on him. He may forget it now but they probably loaned him books, related to him vivid experiences or furnished the reason for more self-searching. By that time our young man knew pretty much what he wanted from life.

If he didn't get through high school he made it up with night courses. He became an important support for a leading correspondence school. He was a charter member of the "burn the midnight oil" club. If he went to college it was at great material sacrifice to his parents or long hard work on his part. There he met counterparts of his grade and high school teachers who fed the flame of achievement and ambition. These were the people who quietly and almost imperceptibly kept our man on to his goal.

It was the same when our man went to work at his chosen job. He worked hard and moved up the rungs to what is called success. As he swept ahead there were people who lent their shoulders for the upward movement. They furnished the indefinable something that gave our man the inner strength to go forward.

Such was and is our self-made man. Maybe he should set aside a time when he can remember with a prayer or a letter those teachers, friends, bosses, ministers or priests, mothers and fathers who helped him reach that self-made position.

Tom Campbell

Editor

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- Aluminum
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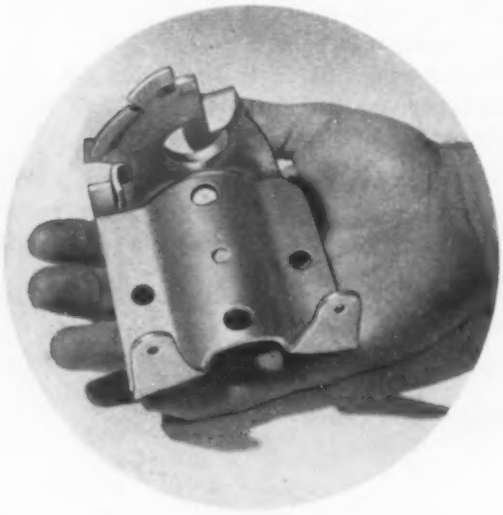
then call . . .

In finished form, the Reflector Hood for Street Lighting installation (above) is 76" long, 13⅜" wide, 6¼" deep, drawn in one piece from .0598" Aluminum sheet.

The part below, in contrast is only 3¹³⁄₃₂" long x 3⅜" max. high. blanked, perforated, off-set and formed in a complex shape from .120" mild steel. It is an automatic Transmission Control Shaft Support.



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PARISH pressed metal parts for better products

Dear Editor:

Letters from readers

Watch The Communists

Sir:

Bully for you on your editorial in the Jan. 28 issue, "Watch The Communists Closely," especially for that part of it reading in part, "Let's not feel that we have to have meetings and dealings with Russia."

I think we should always remember the inescapable fact—far fetching as it might seem—that the "naughty" boy and girl are soon cured by the process of being ignored.

And also remember the way an irksome individual in a business organization is soon cured or resigns from the company—again the process of being entirely ignored.

Just a thought of encouragement to you and a plea to keep up the good work on the subject matter of the paragraph from which the above was taken.

H. F. VAN WAGNER
New York

Screw Fasteners

Sir:

We have read with interest the article in your Feb. 25 issue on screw fasteners receiving carbon restoration and hardening treatment.

We would appreciate your advising us of the author's name and address.

H. F. McCOPPIN
Illinois Tool Works
Chicago

More information about any furnace in our Feb. 25 issue can be had most quickly by writing to Industrial Furnace Manufacturers Assn., 412 Fifth St., N.W., Washington 1, D. C.—Ed.

Solderless Joining

Sir:

On the Newsfront page of your Mar. 4 issue an aluminum powder flux for joining aluminum without solder is described briefly.

Can you tell me where to get more complete details?

N. KAPLAN
Research Chemist
Kollsman Instrument Corp.
Elmhurst, N. Y.

More details may be obtained from Dr. Wyatt, assistant technical manager, Horizons, Inc., 2891 E. 79th St., Cleveland 4, Ohio.—Ed.

Dual Salt Bath Unit

Sir:

In the Feb. 25 issue under Surface Treating & Hardening, p. F-9, we noticed an article concerning the austempering of lawn mower blades. We are quite interested in this process as we are manufacturers of small dental burs and feel that this method would be an improvement over our present method.

Would you please advise us the manufacturer of this type furnace so we may contact them.

R. H. BRIESKORN, JR.
Blue Island Specialty Co., Inc.
Blue Island, Ill.

The furnaces are manufactured by Ajax Electric Co., Inc., Frankford & Delaware Aves., Philadelphia 23, Pa.—Ed.

Strike Cost Computer

Sir:

Please send us full particulars on the personal strike cost computer prepared by the Bridgeport, Conn., Manufacturers Assn. as mentioned on p. 89 of your Mar. 4 issue.

R. K. HOWIE
General Manager
Grigoleit Co.
Decatur, Ill.

Further information may be obtained from the Bridgeport, Conn., Manufacturers Assn. They have prepared a manual "Your Personal Strike Cost Computer" which tells how much it costs an employee to strike for from 1 to 20 weeks.—Ed.

Electric Furnace Economy

Sir:

As near as I can remember, about 2 or 3 years ago, you had an article in your publication dealing with the theoretical maximum size of an electric furnace.

I am unable to find my notes in regard to this article and if you can tell me the date of the issue which carried this article, it will be greatly appreciated.

W. M. ALEXANDER
Asst. Purchasing Agent
Sheffield Steel Corp.
Kansas City, Mo.

We believe the article you refer to is "Some Notes on the Economics of Tonnage Steel Melting in the Electric Furnace" which appeared in our Dec. 8, 1949 issue.—Ed.

Cold Rocking

Sir:

It is with considerable interest that I recently read the article "Cold Rocking Solves Design and Maintenance Problems" as it appeared in the Nov. 5, 1953 issue.

If it is possible to obtain tear sheets or reprints of this article, I would appreciate your sending six copies.

R. P. KRAUSE
Engineer
Krause Metal Process Co.
New Castle, Pa.

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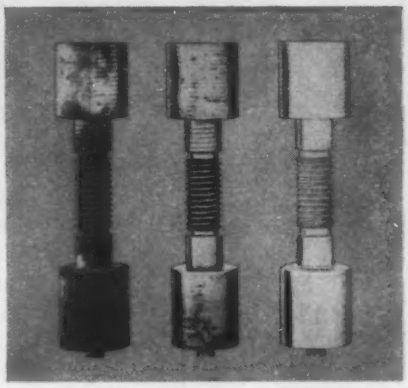

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Look at these steel samples—they tell the story. After 3 years of unsheltered storage outdoors in an industrial marine atmosphere, only the VPI wrapped sample on the right is still bright and clean. The untreated sample on the left was wrapped in plain kraft, the middle one treated with a good rust-preventive oil and wrapped in Grade A barrier material. All were overwrapped with kraft-asphalt paper.

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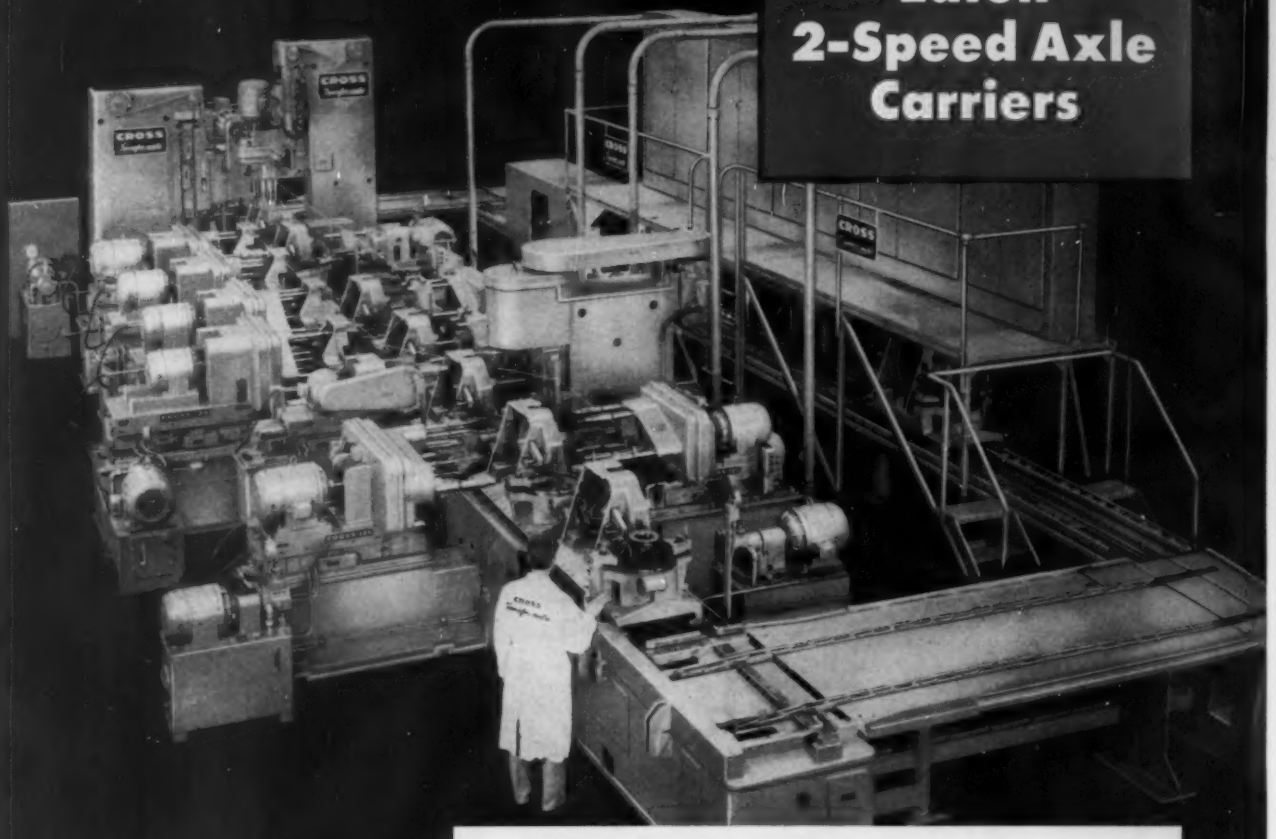

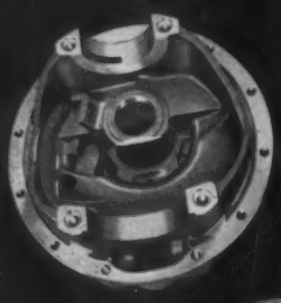

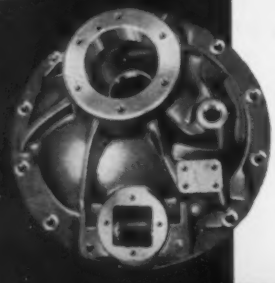

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by William M. Coffey

Inside The Iron Age

Some people use Weegie Boards, some use crystal balls, but your ffj editors—if they use anything at all—must have electronic models. Take the matter of estimating aluminum production for 1953. We had to make an estimate in 1952 for our Annual Review & Forecast issue. In December, 1952, Nonferrous Editor Bob Hatschek predicted that 1953 output would be between 1.2 and 1.3 million tons. Then he had to make another estimate for the Jan. 7, 1954, Annual Review issue, with only 10 months production figures on hand. He estimated that at 1,251,086 tons. Last month when the actual figures were issued he took a look at his prediction and estimate. Actual output was 1,252,015 tons. So the 1952 estimate was pretty much on the target, while the estimate made in '53 on 10 months figures was off by 0.07 pct. (Someone put on an extra shift.)

We only bring this to your attention, of course, to let you know we're pretty hot stuff around here.

Puzzlers

Probably the longest puzzler we've submitted to date had the easiest answer. This was done, of course, to eliminate the lazy people and to confuse the rest. It did neither because all 38,000 of our subscribers answered it correctly. The puzzler was the one about "which of the Arabs had the slower horse" and the answer as our two-year old toddler told us was for each Arab to ride the others horse. A partial list of the 38,000 winners follows:

Mark Perucich, C. R. Peterson, R. J. Wirth, Margaret Seeley, A. Davit, Miss Charlsie Burch, U. L. Janssen, Thomas P. Vicale, Ray Robinson, Alan Lazar, Clancy Imislund, William Collette, Leon Elmer, John Bow, Arthur Chapman, Jesse Drake, Phillip Evans, Ralph Fleming, Stephen Garfield, Mary Garcia, Raymond Jones, Bert Lester, Edward McBride, Robert Myers, Paul Schack, Joseph Sinker, Edward Kyle, Frank Kirkland, John B. Jacob, E. L. Gruber and Beniamin Dorsky.

New Puzzler

We give you a set of dominoes and a checkerboard. Each domino is large enough to cover two squares of the board, and you can easily arrange 32 of them to cover the 64 squares of the board. Now arrange 31 dominoes to cover all squares except the two at the opposite ends of the diagonal.

Inside Any Company

These telegrams from Joseph Blotz, buyer, to a struggling manufacturer tell a familiar story that we're sure you'll recognize:

March 1, 1953
Hold Up All Deliveries
Joseph Blotz

April 1, 1953
Cancel Everything
Blotz

May 1, 1953
Confirm Cancellation Immediately
Blotz

July 1, 1953
On May 1 We Asked For Confirmation On Cancellation. This Telegram a Bookkeeping Error. Kindly Reinstate May Order
Joe

September 1, 1953
In Bad Way For Goods. Anything You Can Do Will Be Much Appreciated. Please Wire Deliveries Collect. Your Best Friend.
Joe

October 1, 1953
Many, Many Thanks For The Shipment. Can't Tell You My Gratitude But Knew You Would Come Through For Me. If You Can Squeeze Out A Few More, I'll Never Forget It. Regards To All The Family.
Joe

November 1, 1953
Surely Need Anything. In Terrible Shape On All Sizes. Job Is At Stake. Help Me.
Joe

December 1, 1953
It's Awful. All Branches Will Have to Close Four Days Before Christmas. The Boss Is Tearing My Hair Out. Please Ship Anything. Fast! P.S. You Coughed Over The Phone Yesterday, Better See A Doctor.
Your Little Joe

December 10, 1953
Please.
Joe

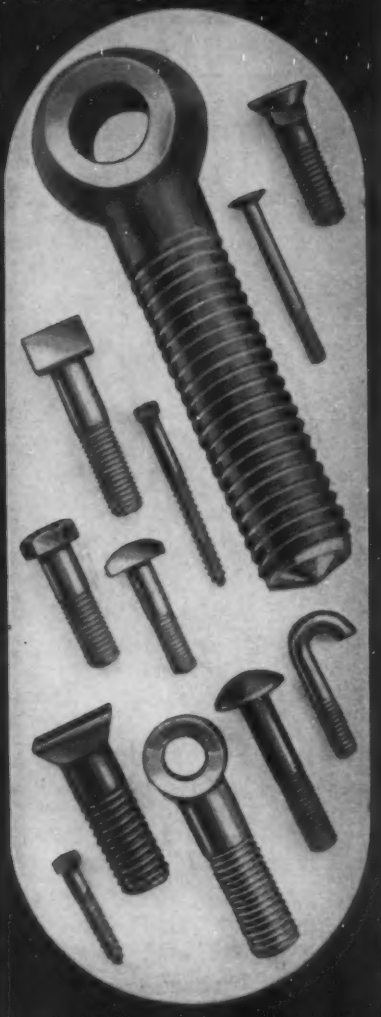
December 26, 1953
Cancel Everything!!!
Blotz

This comes from Assistant Technical Editor Walter Patton who got it from Mrs. S. S. Kaufman, President, The Campers Sweater & Sportswear Co.

THREADED SPECIALTIES

EYE BOLTS

by an exclusive method



Among Pawtucket's many specialty products, these lower-cost eye bolts or "swing" bolts are the leaders in this field. Pawtucket's exclusive production method keeps cost low, dimensional accuracy unusually high and strength above standard.

Pawtucket eye bolts are made in standard sizes ¼" and larger, or to your specifications. In any size, you can depend on a uniform Class 3 fit.

BETTER BOLTS SINCE 1882

PAWTUCKET

"THE BOLT MAN"

MANUFACTURING COMPANY

327 Pine Street Pawtucket, R. I.

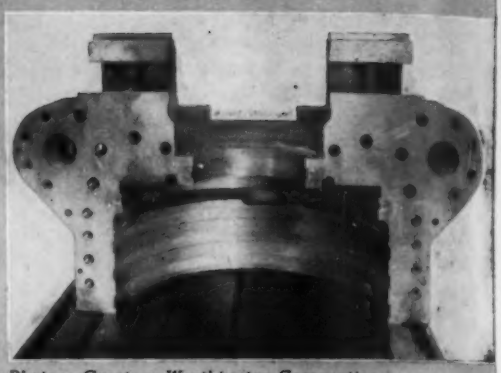
THE PLACE TO SOLVE YOUR BOLT PROBLEMS

T. M. REG.

BICKFORD *for big work...*

This powerful Cincinnati Bickford Super Service Radial Drill was purchased to facilitate handling of "big work." It was the right machine for the job. In the complete line of Cincinnati Bickford Radial Drills, with their many outstanding features, is the right machine for you.

Write us for descriptive literature, or consult our Engineering Department on drilling needs.



Photos—Courtesy Worthington Corporation, Steam Turbine Division, Wellsville, N. Y.

Here 3" pipe tap holes are being drilled and threaded in 3000KW Turbine Generator End Casing.

CINCINNATI BICKFORD

RADIAL AND UPRIGHT DRILLING MACHINES

THE CINCINNATI BICKFORD TOOL CO.

Cincinnati 9, Ohio, U.S.A.

The Iron Age
FOUNDED 1855

THE IRON AGE Newsfront

ULTRASONIC SOLDERING of aluminum has been developed by one company for production use on diecastings, sand castings, sheet, wire and extruded products, it is reported. No flux is used.

GROWING FREQUENCY OF ROLL CHANGES, due to shorter runs and demands for faster deliveries, is plaguing many carbon and alloy bar producers. At present operating rate, producers may make five roll changes or housing adjustments during an 8-hour turn. A year ago, the rate was about 1½ roll changes and adjustments per turn.

A NEW CONTINUOUS ANNEALING FURNACE for stainless steel now being installed in the plant of a Midwest steel producer will operate continuously at 2300°F. Water cooled rolls, protected by silicon carbide, are used in the installation.

A WATER PURIFYING PROCESS recently imported from Europe may have applications in metalworking and metal producing. Silver salts used kill slime-forming bacteria troublesome in boilers and may be effective in preventing cutting oils from turning rancid.

BOOMING GRAIN ORIENTED SILICON STEEL MARKET may attract new producers. One mill is already installing necessary equipment, and three others are taking a close look at potential demand.

USE OF ELECTROLESS NICKEL PLATING is growing for parts having intricate contours and inaccessible areas. One plant, using a 500 gal glass-lined tank, plates an 0.0004 in. nickel coating in 1 hour. Use of insulating material on the tank and a unique method of steam control permit accurate temperature control.

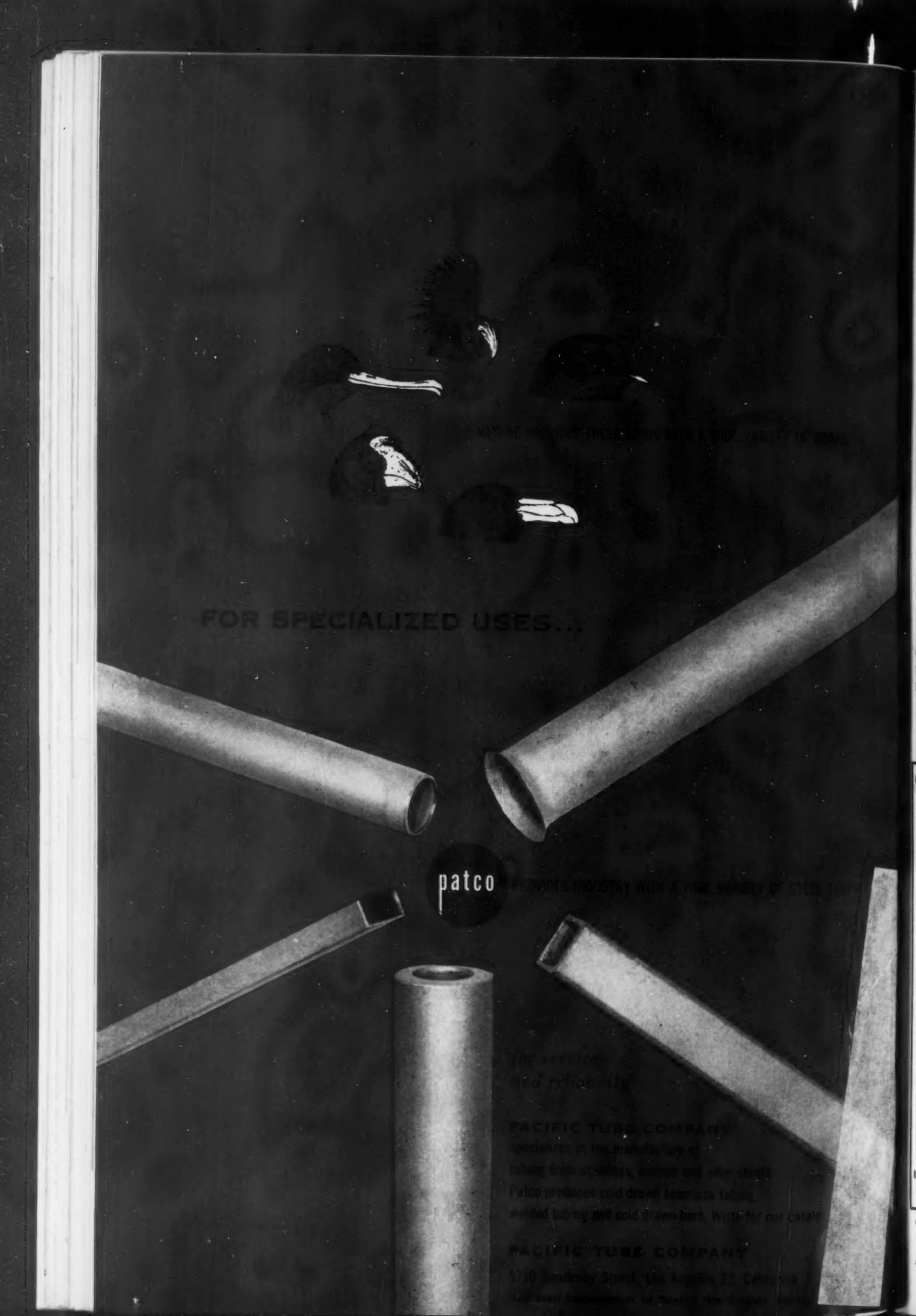
BETTER MICROFINISH AND EDGE RADIUS are claimed for jet buckets finished by tumbling on a reciprocating circular fixture. Position of bucket on fixture, distance between fixtured buckets, chip size and slurry compound control finish obtained.

HIGH PRESSURE BLAST FURNACE OPERATION is attracting growing interest. In addition to the two U. S. mills using the method in production at least five others are experimenting.

EXPERIMENTS IN THE USE OF RARE EARTHS to improve hot workability of alloy electric furnace steels are being extended to openhearth steels. One company is reported to have made 250 experimental openhearth heats to improve rollability of 20 carbon grades.

GREAT LAKES ORE VESSELS will probably go into action between April 20 and May 1 this year. Late start is anticipated because of sizeable mill stockpiles, reduced steelmaking operations. Fleet will include 276 vessels--10 less than last year. Six vessels were retired and four sold for other uses.

PICKUP IN ALLOY STEEL ORDERS is a good sign of improvement in the steel market. Orders for alloy steel often lead the steel market--up and down. Alloy was first to weaken early last year when overall steelmaking operations were close to 100 pct of capacity.


FOR SPECIALIZED USES...
patco

DIECASTING: New Uses Pace Its Growth

Automatic transmissions help push aluminum diecasting to alltime high . . . Zinc use to slip in '54 but aluminum may equal record . . . Metal prices lower—By *R. L. Hatschek.*

The diecasting beanstalk last year almost reached the record height of 1950 and did manage to send a few shoots to alltime highs. But the plant's due for some pruning and some new growth in 1954.

On a weight basis, zinc diecastings shipments by job shops totaled 172,000 tons in 1953, a gain of 39,000 tons. Adding estimated figures for captive shop production swells the zinc total to 256,000 tons.

Job Shop Sales Soar

Aluminum use by job shops increased 29,000 tons to score a new record of 92,375 tons with an estimated captive output of 25,750 tons boosting total aluminum diecastings to 118,125 tons.

Total magnesium diecasting shipments were 3057 tons. No earlier figures are available but a generally lower level than 1952 was indicated.

In dollar volume, job shop sales in 1953 hit a whopping $320 million as compared to the steel-strike-limited total of $244.5 million in '52 according to American Diecasting Institute. Biggest factor in this 30 pct increase was the 31 pct increase in number of cars and trucks produced last year.

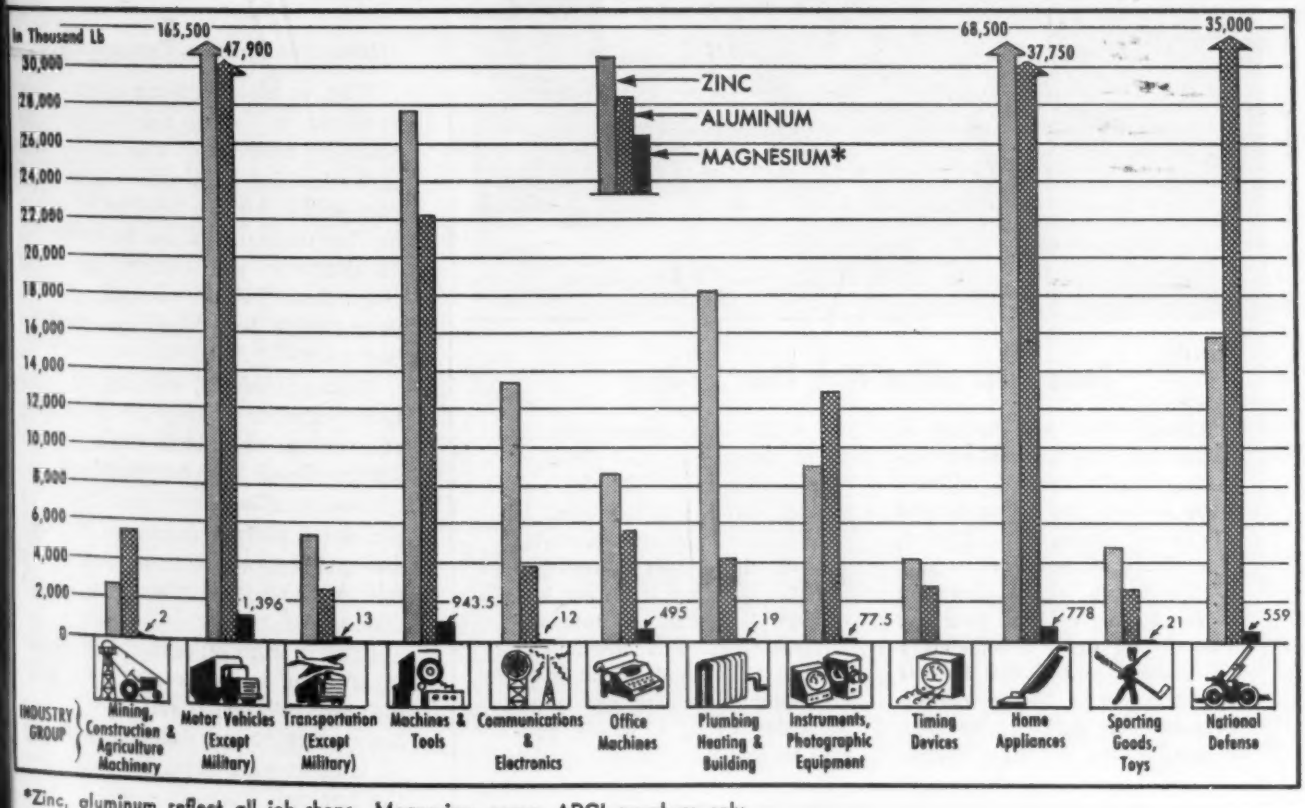
Perfect correlation is shown in automotive purchasing of zinc diecastings—which increased 31 pct over the previous year to a total of 82,750 tons. This figure represents 48.1 pct of job shop sales of zinc diecastings.

Autos Boost Aluminum

Automotive use of aluminum diecastings scored a terrific 70 pct boost on the strength of higher production plus increasing emphasis on automatic transmissions. Some of these units are almost completely built of diecast aluminum parts. The auto industry also topped the aluminum list with 25.9 pct of total sales and the magnesium list with 32.3 pct.

Second biggest user of both zinc and aluminum diecastings in 1953 was the home appliance and equipment industry. This group added 9000 tons of zinc and 5000 tons of

Who Buys Diecastings



*Zinc, aluminum reflect all job shops. Magnesium covers ADCI members only.

aluminum diecastings to the 1952 totals to bring the '53 figures to 38,250 tons and 18,875 tons, respectively.

Job shop sales to appliance manufacturers accounted for 19.9 pct of the zinc total, 20.4 pct of the aluminum total and 18.0 pct of the magnesium total.

1954 Production Eases

But that was last year. How about 1954? January reports by job shops show zinc tonnage running 14 pct behind last year's average and aluminum is down about 5 pct. Magnesium, which took a beating in 1953 is running fairly steady.

Informed sources expect to see totals for aluminum running higher by early second quarter, perhaps matching 1953. This is based on increasing acceptance of the automatic shift in automobiles. If zinc sees any upturn at all it will be a smaller one.

Dollar volume of the industry will drop more this year than tonnage as a result of lower metal prices. Average price for Special High Grade zinc in 1952 was 17.713¢; in 1953 it was 12.38¢. In last week's increase this grade of zinc went to 11.25¢ per lb.

Aluminum is also cheaper today. Price for remelt AXS-679, a representative diecasting alloy, is quoted at 19.50¢ to 20.00¢ per lb by ingot makers. Last year the average was 22.187¢ and in 1952 it was 20.485¢.

Sales picture will show a new twist in 1954—dollar volume of aluminum diecastings is a sure bet to top dollar volume of zinc discastings for the first peacetime year in history. Only times this happened before were war years in which zinc was very limited. Two things contribute to this: (1) The much greater impact of metal price changes on zinc diecasting prices, and (2) relatively higher proportion of diecastings now made of aluminum.

Little Direct Competition

Former disparity results from lighter weight of aluminum, higher percentage of a 1¢ price change of the lower zinc price, and certain economies in diecasting zinc.

Both zinc people and diecasters are quick to point out there is actually very little direct competition between zinc and aluminum. Increasing use of aluminum does not reflect any large-scale replacement of zinc by the lighter metal. The automatic transmission, for instance, is aluminum's biggest booster—and it could never be made of zinc.

More important competitors of zinc in the auto industry are plated carbon steel stampings and some stainless steel stampings now generally used for grills and other brightwork. A notable exception is the Buick grill which is perhaps the most important zinc diecasting in the automotive industry.

Research Higher Temperatures

Zinc is also winning some new products on its own merits. An outstanding example of this is the diecast television bezel which is largely responsible for the healthy increase in zinc diecastings use in the communications and electronics category. And TV set production this year should be at least as good as last year.

Research people, looking into the more distant future, are confident of eventual success in their search for improved high-temperature die materials. They are now able to pin down certain causes of failure and predict whether or not a die will crack under a given set of conditions.

Present work on economic die materials for brass is going in two different channels and, while nobody's setting any dates, diecasting of iron doesn't seem too far over the horizon.

Ordnance

Texas Plant Makes More Than Six-Guns

Though most gun barrels in Texas are the six-shooter variety, heavy caliber military guns barrels are being forged at Cabot Shops, Inc., Pampa, Tex. The ordnance work is part of the firm's larger operation of fabricating oil well pumping units. The firm, a subsidiary of Godfrey L. Cabot Co. of Boston, uses a 15-ton electric furnace for making its own ingots. These are later forged on a 1500-ton steam-hydraulic press, bored out and finished. The ordnance building was erected by the government in World War II and together with equipment is now leased by Cabot. Ordnance work employs about 145 persons and total annual sales hit $3.5 million last year with outlook good based on 6-month backlog this year, according to R. A. Baker, general manager.

EXPORTS: U. S. Faces Tougher Selling

Overseas competition gets rolling . . . Report 30 pct price cuts, easy terms . . . U. S. machinery, TV sets, chemicals, farm implements have best sales chances—*By K. W. Bennett.*

Export managers, orphans when domestic business is high, are due for considerable increased attention during 1954. Six months ago, foreign competition began to stiffen in overseas markets for American goods. The switch from a sellers' to a buyers' market was finally complete. The exporter, who'd been crying for additional output to keep his foreign accounts on the potential list, suddenly found himself loaded with products just as foreign buyers began buying elsewhere in droves.

Competition from German, British, Canadian, Swiss, and Italian firms, picking up steadily for 2 years, became hot. Markdowns of 30 pct and better were reported in individual product lines, with as much as 6 years to pay. The foreign competitor was often backed by his own government, could get his cash after 6 months no matter how long the account took to pay off its debt.

Competition Is Tough

Export trade is good business, but it's no panacea, and any exporter knows it's a tough market. In 1945, U. S. exports totaled $9.8 billion. In 1950 the figure rose to $10.3 billion. In 1953, a record $15.7 billion in goods was exported. But in that year actual civilian output for export was 7 pct below the 1952 peak, with increased military shipments making up the remainder.

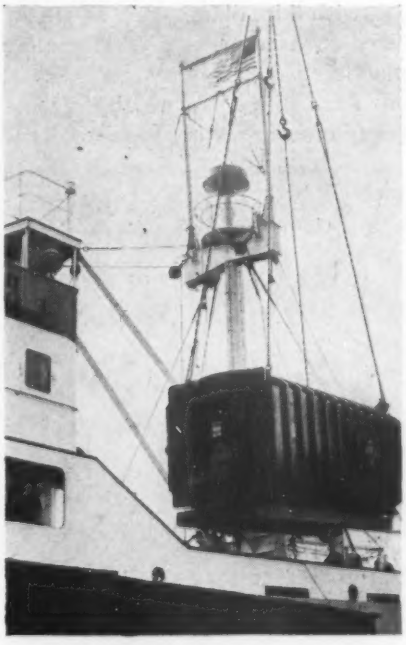
The upcurve in exports since 1949 has encouraged a number of manufacturers, especially since last July when domestic business activity began to slow, to seek markets overseas. Most are finding that export selling is toughly competitive. Nationalism, increasing foreign competition, currency exchange values, trade restrictions, law by decree that can change overnight, are a few of the hair whiteners. Financing is tough. Foreign competition, with government backing, can reduce the customer's down payment, increase his length of time to pay.

One firm contacted had $3 million tied up in customer financing, would have to wait the full payment period to get it all back. A Canadian firm could get the amount from its government in about 6 months.

Machinery Prospects Good

But overseas selling has picked up, as was already evident in November and December of 1953, when machinery and vehicle sales rose by $25 million, metals and manufactures sales increased from $86 million to $102.6 millions, and chemicals sales increased by $12 millions.

With the '54 selling season underway, manufacturers were beginning to do a little forecasting in a field that is harder to predict than Chicago weather. Tentatively, chemicals, drugs, electrical machinery, and industrial machinery look pretty good for export in 1954. Sales of television sets continue to climb, and enthusiasts foresee as much as 20 pct increase in TV export during 1954. While tinplate is falling, other steel commodities are holding, though there is considerable caution in the outlook.



LOADING 26,667-kva transformer for export to France.

Earthmovers Stay Strong

Export automotive parts are moving more strongly, and 5 or even 10 pct increases are foreseen in '54. Photo equipment looks good, and will increase if export men in the field are correct.

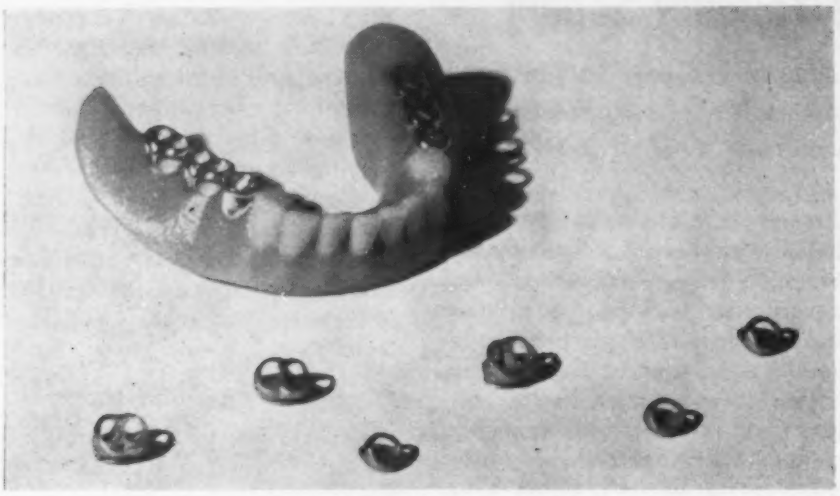
Farm equipment is pretty well divided. While overseas sales potentials are reported strong, or even "up 30 pct," actual sales prospects aren't that strong. As one export manager would have it, "We hope it doesn't get any worse."

Scientific equipment, despite strong annual sales increases at home, has fallen sharply within the past 2 months. Heavy earthmoving equipment has been doing well in export since the war. In '53, record sales were reported. They should do as well in '54, but nobody will promise anything higher.

Build Plants Abroad

With medium-sized U. S. firms now building plants abroad, this country will have a firm foot in the world market. But most export managers point out they couldn't offset the effects of a real slump in domestic U. S. markets, even with plants located squarely in the center of all their foreign markets.

Markets under consideration are Brazil, Canada as always, Columbia, Cuba, and the Philippines. Venezuela and Mexico have been good, but a few commodities are now running into trouble there. Spain is definitely improving, and hopes are running higher for Argentina.



New dentures have built-in cavities as . . .

"Lost Wax" Teeth Go Nature One Better

Nature can be improved upon, according to Dr. I. L. Cook, Suring, Wis., dentist, who has introduced unique artificial posterior teeth based on the food grinder principle that are remarkably unlike standard equipment. In the new design, chewed food is permitted to pass through openings in the tooth instead of being ground between two continuous surfaces.

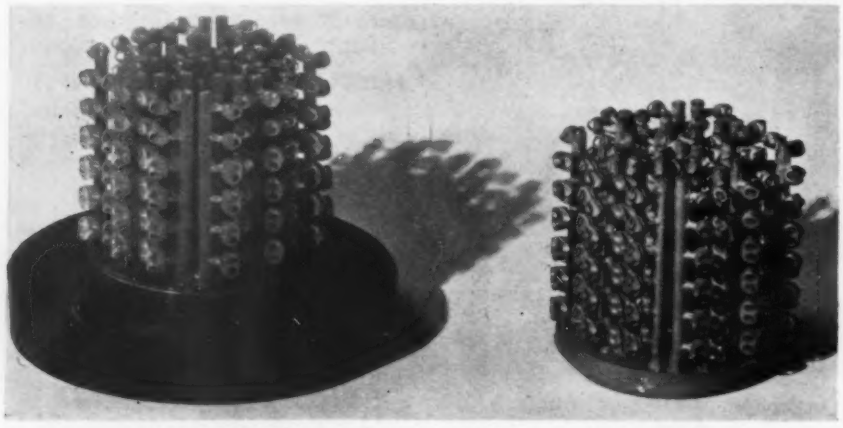
Advantages claimed for the new dentures include better mastication, reduction of pressure against the supporting bone and tissue, more comfortable dentures and, consequently, improved digestion. Castings are produced by the "lost wax" process by Investment Casting Div., Nels Davies Dental Laboratory, Green Bay, Wis.

Several years ago Dr. Cook became dissatisfied with existing artificial teeth. Working closely with investment casting experts, he produced his unique design.

The Masticator, as the new design is called, is a precision cast chrome alloy. Up to 36 sprues of 6 teeth are produced per casting. Weight of metal cast is 2¾ lb. The flask is 7 in. high with 5 in. diam.

A 16-kva spark gap high frequency Ecco furnace melts a cast of alloy in 5 minutes. Prior to heating, the plastic cluster is precoated with a special formula developed by the Dean Co., Park Ridge, Ill., which prevents damage to the mold during heating. Backup material is produced by Ransom Randolph.

By bringing the flasks to a temperature of 1600°F, plastic models are expended in 3 hours. Molds are cast in an Ecco centrifugal machine.



CASTING TREE produces up to 36 sprues of 6 teeth.

New Plants:

Midwest building zooms . . . Fabricators are optimistic.

In the "a fig for recession talk" department—industrial plant expansion in the Chicago area during February rose to $30,852,000 as compared with $20,442,000 a year ago. The February figure represents an $11 million climb from $19,880,000 in January of this year. And structural fabricators believe there is considerably more in expansion planning still on the engineering drawing boards.

Major fabricators headquartered in the area report their business levels at least holding with the same period last year. Backlogs of up to 5 months are common among the larger firms, with third quarter prospects looking good for the inception of many new highway projects.

Varied Firms Build

At present the tonnage of fabricated steel going into industrial and commercial projects is strong, and the tempo of fabricating work up after a slight lull in early fourth quarter of last year. Drops in AEC and other government work accounted for the late 1953 setback.

The list of firms expanding their plant facilities in Chicago and environs during February represents a healthy broad cross-section of industry: Hotpoint, Inc.; Inland Steel, Great Lakes Refining Co., Ford Motor Co., Aircraft Engine Div.; Fresh'nAire Co., Div. of Cory Corp.; Valley Mould & Iron Corp., Powdered Metal Products Corp. of America, Pax Screw Machine Corp., Illinois Gear & Machine Co., C. D. Cash Co., Phillips Control Corp., Linde Air Products Co., Alpha Products, Inc.; and Steel City Welders & Fabricators, Inc.

At the same time, in the same general area, new home starts were reported almost 100 pct ahead of the same period last year. In 1953 Chicago area enjoyed a boom housing year, though the national figture fell by 2.1 pct.

PLASTICS: Entering Sheet Market

About 20 firms making plastic sheets . . . Seiberling Rubber spending $600,000 for commercial plant . . . Initial output rated at 1.5 million lb—By R. M. Lorz.

The fast growing plastics industry, which is already making good headway in the pipe market, is beginning to move into another steel stronghold—sheets.

In the past few years plastic pipe extruders have been popping up like mushrooms. And a number of steel firms are either entering the field on a commercial basis or investigating its potential.

Now it appears this history may be repeated as sales of plastic sheets increase.

Rubber Company Enters Race

Presently there are about 20 firms pressing out plastic sheets. At least 6 producers specialize in rigid polyvinyl chloride (PVC). Producers say this material will offer stiff competition because it is readily adaptable to metalworking practice. Last year an estimated 7 million lb of rigid PVC sheets were marketed. Some expect that figure to jump to 70 million lb by 1957.

Seiberling Rubber Co., Barberton, Ohio, is one firm which hopes to move along with expanding demands. The Seiberling name has been a familiar landmark in the rubber industry for years.

Building Commercial Plant

How did they happen to get into plastics? Vice-president Harry Schrank told THE IRON AGE his firm wanted to stay vital and competitive by diversifying. In order to fulfill that goal a 4-man team worked for over 2 years under the direction of new products manager Art Leedy. Art and his crew decided on plastic sheets after devoting exhaustive months to research and development. Once the decision was made Seiberling conveniently had the mixers, hot mills, calenders and presses needed for sheet production.

A pilot plant operation has now been underway for over a year. It has resulted in development of a new process for making Seilon sheets—the company's trade name for its brand of the fine, salt-like resin which emerges from processing in sheet form.

Everything is set for commercial production. By midsummer of this year Seiberling will complete a new plastics plant at Newcomerstown, Ohio. Initial investment in the plant is estimated at $600,000. Capacity during the first 2 years of operation should run around 1.5 million lb annually. While the Ohio firm does plan to fabricate things like auto seat guards and highway signs, production for the most part will be in sheet form to fabricators.

Withstands Corrosion

Market for PVC sheets can roughly be divided into 3 major parts: (1) Chemical and allied (2) decorative and building and (3) display and specialized form products.

Chemical demand is expected to provide the greatest volume, at least for the time being. Sheets can be used in linings of tanks, in unsupported tanks, hoods and ducts, heat exchangers, handling trays—in fact in most applications where acids or corrosion are a problem.

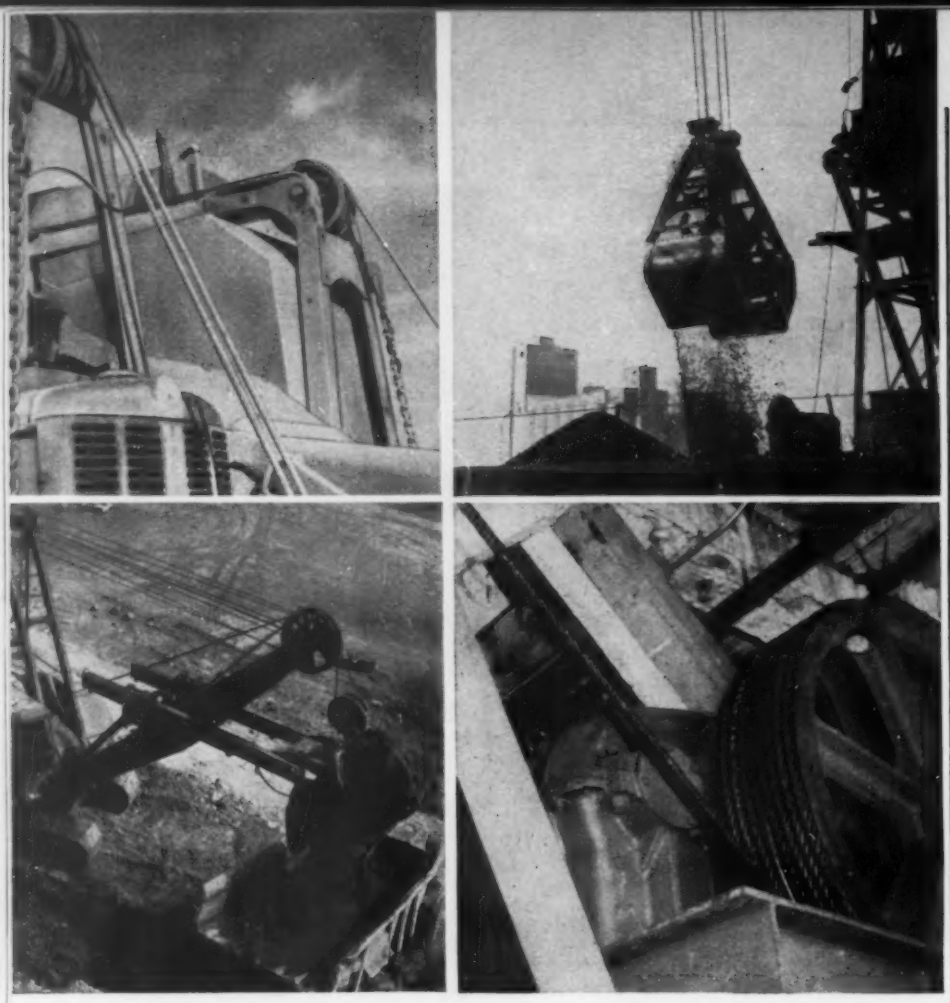
GRINDING plastic produces close tolerances, precision finish.

Decorative and building demand should also be good. PVC sheets can be embossed. Fabrication into paneling, either flat or corrugated, is expected to serve as another important outlet. Anyone who has ever seen a plastic Santa Claus or a bottle advertisement with 3-dimensional effect can sense potential in the display field.

How It's Made

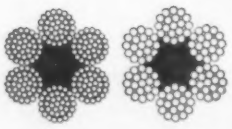
When the Newcomerstown operation gets under way Seiberling will produce sheets in gages rang-

CUTTING THREADS in plastic is simple. Machining is easier than with many types of metals and high precision is characteristic.



WHEN WIRE ROPE requires extra flexibility and must also lift or pull heavy loads, an unusually pliable, strong rope is needed. Rope jobs like paver skip hoists, overhead cranes, large shovel and dragline hoists, and sawmill carriages demand these qualities. That's where the use of 6 x 37 Red-Strand wire rope saves time and money.

Where will 6x37 Red-Strand improve your wire rope service?



6 x 37 6 x 19

Look at a cross section of 6 x 37 wire rope. You see three rings of small, uniformly sized wires in each strand. This differs from a rope construction like 6 x 19, which contains fewer and larger wires.

The *smaller size* wires make 6 x 37 more *flexible*. The *larger number* of wires maintains rope *strength*.

Would this combination improve your wire rope service? Would it solve a problem for you? Leschen's higher-than-rated quality is also providing longer-than-expected service to heavy industry everywhere.

Check with your Leschen man. He can help you.

Leschen's 64-page Wire Rope Handbook tells you all about 6 x 37 and other Red-Strand wire rope constructions. Ask or send for your free copy.

LESCHEN WIRE ROPE DIVISION
The Watson-Stillman Company
(A SUBSIDIARY OF H. K. PORTER COMPANY, INC.)
St. Louis 12, Missouri

LESCHEN
HERCULES Red-Strand
WIRE ROPE

—Expansion—

ing from 1/64 to 1¼ in. Raw materials will be supplied by a chemical firm which has experimented with different resins for over 7 years. Seiberling does not intend to go into chemical production.

Seilon itself is a thermoplastic which has excellent physical, chemical, electrical and thermal properties. Basic resin in powder form is first mixed with stabilizers, some lubricant and carbon black for color. It is then milled, calendered at about .020 gage, cut to size, laminated, and fused in a press. Finished sheets are trimmed before shipping.

Fabrication Easy

Size ranges can vary but standard size at Seiberling usually measures 48 x 72 in. Sheets can be welded by the hot gas welding process.

Even though Seiberling's plastics operation is still in the pilot stage the company has sold rigid PVC in various forms for over a year. Carl Figenscher, in charge of plastic sales, told THE IRON AGE unsolicited response had amazed him. He said sales so far had been divided 50-50 between plastics firms and metalworking shops.

Be Careful Cooling

Since the total possible market includes everything from gaskets to game boards metalworking shops are ideally suited to handle this material. Using methods usually applied to most light metals any firm can machine rigid PVC with comparative ease. Most important precautionary measure is cooling. To prevent breakdown of the PVC efficient systems must be set up to insure proper heat removal from tips of tools.

PVC is also generally available in tubes, pipes, rods and bars of all sizes in addition to sheets and plates.

Pricewise initial cost of PVC sheets is comparable to stainless steel. However, for some specific applications light weight, corrosion resistance and cost saving in machining and forming make it competitive with steel and other materials.

Executives Map Recession Defenses

Businessmen generally confident on own fields, AMA meeting hears . . . Hot discussions held on sales, other problems . . . Taxes a No. 1 question—By T. M. Rohan.

A good part of today's apprehension about market prospects may be coming from people talking about somebody else's business. Businessmen attending the American Management Assn. general convention in San Francisco last week heard J. Wilson Newman, Dun & Bradstreet president, put it this way:

"All our surveys so far indicate people are more optimistic about their own business and industry than other businesses they know less about. They're all sure they can make a go of it but figure the other boys are going to have tough sledding. Let's weigh our words on business conditions carefully. Don't talk ourselves into it."

Give and take at the convention's daily business panel discussions was spirited. Questioners were eager for precise details on analyzing and solving sales and management problems, extending profit sharing down the line and delegating responsibility effectively.

Lists Hot Items

Taxes, government spending, balanced budgets and deficits lead all other queries sent in to *Kiplinger Washington Letter* headquarters, according to John E. Ryerson, associate editor, and he had answers for many of them.

Mr. Ryerson said the top income tax rate on corporations is not going back to 47 pct on Apr. 1 as provided under law. The 52 pct rate will be continued another year despite last minute attempts in the Senate to cut back to 50 pct.

He said businesses will have more freedom in determining depreciation rates. Firms will be able to take double the normal rate and apply it to the remaining amount. A piece of machinery with 10-year life, therefore, will get 20 pct depreciation the first year, 20 pct on the remaining 80 pct in the next year. This covers about half the cost in the first 3 years.

More freedom in applying the straight-line method will also encourage machinery replacement. Another objective, he said, is a less punitive attitude in enforcing provisions against unreasonable accumulation of corporation surpluses. Operating losses should also be permitted to be carried back 2 years rather than the present 1 for tax purposes.

And corporations may go on a partial pay-as-you-go basis for income tax. Firms of over $50,000 income would file estimated returns just before the end of the third quarter then spread payment over the last 2 quarters and first 2 of of the following year.

Mr. Ryerson added general business outlook is the second hottest query and a "moderate softening" is what Administration circles look for. They are also prepared to bolster economy with defense spending, construction and other measures and are watching signs daily. Government officials see no big drop and "The net of all our checking with academic, government, business and labor sources confirms that point of view. Consensus is there will not be a recession."

"And now for the financial report . . ."

Some speakers were at direct odds with each other on company viewpoints. George L. Hall, Standard Oil of California organization counsel, said his firm wholeheartedly endorses employee participation in civic and political activity. A. E. Werolin, vice-president and general manager of National Motor Bearing Co., said his firm takes an opposite viewpoint—that it too often involves complications for the company.

Submit Schedules

Mr. Werolin also said National Motor Bearing makes salesmen submit written schedules weeks in advance of calls expected to be made and portion of potential business expected to be obtained. Actual calls are then checked against schedules. Selling expenses are also more tightly controlled. Number of calls per account is specified, production standards and market research are expanded and heavier emphasis generally goes to internal budgeting and expenditures.

All business speakers wholly endorsed a thorough analysis of company operations to take off the fat for hard selling.

The sales manager himself is a prime target to start with, according to George R. Summers, marketing director of Food Machinery & Chemical Corp., San Jose, Calif. The usual problem is that he just does not have time to develop basic planning. He does not have the time for study. Furthermore this company introspection sounds like a lot of paperwork and he is already overloaded with that.

"Free the Sales Manager"

But Mr. Summers maintained, "The greatest single step forward in expense control is to free the sales manager from the role of star salesman or glorified, but expensive, sales correspondent. Unchain him from the mounting detail because informed budget control in the full sense is total sales administration at work. Give him time to get out and test marketing methods to see if we are moving the most goods to the most people through the best channels."

The Iron Age

INTERVIEWS.....

Philip M. McKenna
President, Kennametal, Inc.

Full Use of Carbides Still to Come

- Biggest challenge to cemented carbides producers today is to educate industry to the full potential of their products value, says Philip M. McKenna, president, Kennametal, Inc.
- Productive capacity is two to three times current demand, and raw materials are ample, but new design principles must be used for carbides, he told Iron Age Pittsburgh Editor J. B. Delaney.
- Development pattern should follow that of tool steel. Titanium carbide parts boost jet engine efficiency, and use is growing.

Q. What is the biggest challenge facing the carbide industry?

A. Undoubtedly it is to acquaint engineers and management with the valuable results inherently possible in carbides. Particularly when adequate supplies of tungsten, tungsten carbide and many other hard carbide compositions are available. The problem is no longer that of production—in fact from all we can see, the industry could produce two or three times as many pounds of cemented carbide products as it is now called upon to produce. But the challenge is what to produce and in what form to exploit the full potential of this material.

Q. Why is it carbide compositions have been known for 25 years yet the market potential is not even scratched?

A. We need new principles of designing to realize the many possible applications. The devices or tools which are successfully developed of carbide are not necessarily of the same general shape and appearance as those made of steel. For example, when bronze came to be used for tools, the first bronze knives were cast in the same shape as the old stone knife because that was man's conception of what a knife should be like. Often the bronze was cast in a sand mold for which a stone knife had served as a pattern. Modern tungsten carbide tools do not have the traditional appearance of the metal cutting tool of high-speed steel.

Q. In what direction does the future of carbide industry lie?

A. I believe that it will follow the same pattern as tool steel. When tool steel first came out, it was used for tools, knives, scissors, cutlery, metal cutting tools and the like. After a while people recognized that its ability to resist wear and deformation under pressure and abrasion was exactly what was wanted for other products such as gears and spindles.

Applications that look promising include tungsten carbide mechanical elements in machines for pulverizing minerals and for feeding furnaces with coal and in chemical operations where corrosion and abrasion in combination are encountered. Centrifuge nozzles of tungsten are being used with success now, and of course tungsten carbides serve many useful purposes in oil well drilling. Recently synthetic fibers such as dacron have required tungsten carbide cutters.

Q. What are carbides doing to improve the efficiency of jet engines?

A. Titanium carbide alloys have made it potentially possible to operate gas turbines at temperatures 300 to 400°F higher than at present attainable. Most high temperature alloys weaken at about 1550°F. However, the titanium carbides are in the experimental stages and we do not wish to give the impression that they are flying generally. One application which has been in the air regularly in recent months is a waste-gate spindle which must be capable of retaining its strength at

Carbide Study Pays Off

Mr. McKenna: **"Before the potential output of man and machine cutting at three to six times previously attainable speeds could be realized (through carbide tools) a lot of intelligent work had to be done by tool engineers, foremen, machine tool men and managements. I want to mention that because these new opportunities require similar attention by engineers and management in other fields where the use of these intrinsically better metals for resisting deformation, wear and heat will yield equally revolutionary improvements."**

a temperature higher than that attainable when melted alloys are used. That is just one example of carbide use. There could be hundreds, including applications in other fields.

Q. What about the availability of raw materials?

A. There is plenty of tungsten. In fact, 1952 imports and domestic production totaled about 24 million lb of tungsten as opposed to a consumption of only 8 million lb. A majority of that output went into government stockpiles. I would like to correct the erroneous impression that supplies of tungsten might be cut off on account of scarcity. That is exactly opposite of the true situation. Production in the U. S. from domestic mines last year was about 7.5 million lb, practically as much as this country consumes.

Q. Do you foresee any great expansion of carbide capacity in the near future?

A. There is already two or three times as much capacity to make the raw materials and rough molded blanks as is used. But there is need for greater capacity in grinding and otherwise forming pieces to particular requirements. Incidentally, the prices of bort today reflect its increased availability for diamond wheels. And diamond grinding is the cheapest way to grind cemented tungsten carbide compositions.

Q. What is the history of carbide tools in metal cutting?

A. The majority of metalworking shops use carbide tools today in turning, boring, facing, and milling operations on steel, cast iron and nonferrous articles. That wasn't always so. In 1939 carbide tools were used on very few steel cutting jobs. Fewer than one-fifth of the carbide tools sold were used for cutting steel. Today I believe the proportions are reversed, with four out of five jobs being done with carbide tools on steel forgings, castings or bar stock.

Aluminum Pipe:

New welding machine being used to cut pipe joining cost.

Drastic cost reduction in joining aluminum pipe is claimed for a new portable automatic welding machine. Jointly developed by Reynolds Metals Co. and Air Reduction Sales Co., the machine is said to make the cost of aluminum pipelines competitive with steel—without considering aluminum's special characteristics (THE IRON AGE, June 18, 1953, p. 102).

First use was in laying a 12-mile high-pressure line from White Point (Tex.) gas field to Reynolds' La Quinta alumina plant near Corpus Christi, Tex. The 40-ft sections of 8⅝-in. pipe were joined in an average of 2 minutes for a four-pass weld. Welds stood up under 1800 psi tests.

After lining up sections, the 200-lb welder is suspended over the line by a side boom from a truck or tractor. Pipe is clamped as the machine is lowered over it. Push a button and the welding begins. Speed and other factors are controlled automatically.

About 25 seconds is required for welding this size pipe, after which the machine stops, reverses itself and returns to starting position. Clamps are released and the welder is moved to the next joint.

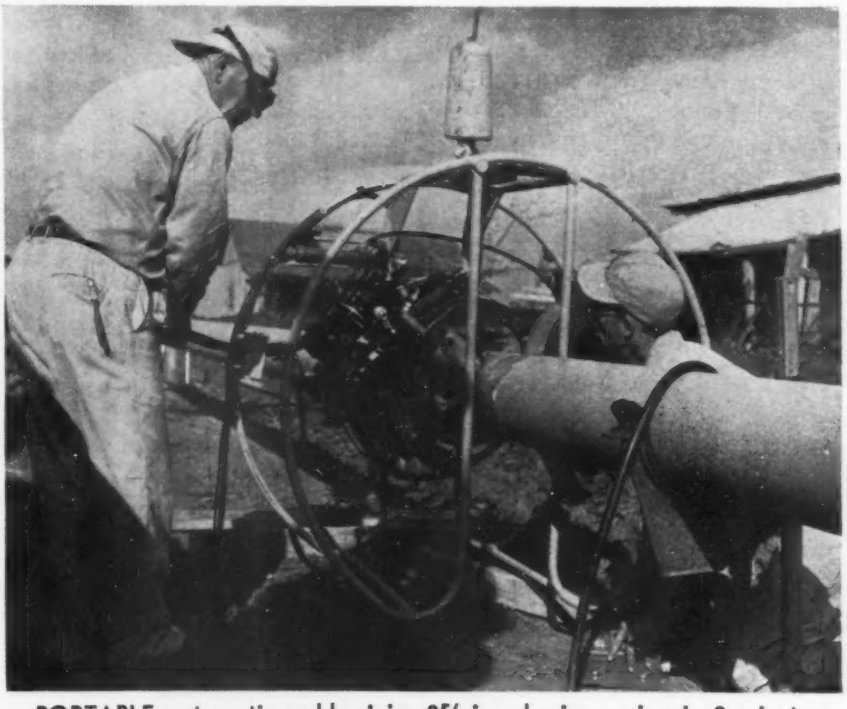
The Aircomatic metallic-arc process is used. Aluminum wire is reel-fed to the welding nozzle and melted by electric arc. Argon, helium, or a mixture of them is used to shield the operation. This, in turn is protected from wind by a guard to permit outdoor operation.

Steel Clad by Nickel Plating

A new nickel "clad" steel plate is being produced. It may be heated, formed, bent, welded and fabricated by other processes without damage, acording to Bart Mfg. Co., its producer.

The process, called Lectro-Clad, actually plates the steel with nickel, was developed from the process with which Bart has been nickel-plating seamless steel pipe and fittings for Atomic Energy Commission.

According to the firm, nickel thickness can be tailored to suit specifications, thicknesses of 0.006 to 0.010 in. generally solving contamination problems and deposits up to 0.020-in. being used for corrosion control.



PORTABLE automatic welder joins 8⅝-in. aluminum pipe in 2 minutes.

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—Research—

Transistors:

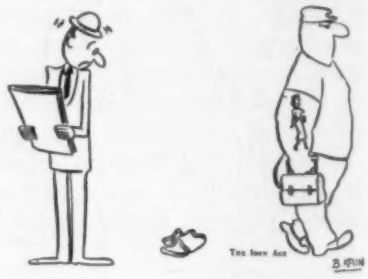
Pass trial by fire and water with new-type crystals.

Two new steps in transistor technology were demonstrated last week by Sylvania Electric Products Co., One is a method for stabilizing germanium; the other is a germanium-silicon alloy that permits transistor operation at more elevated temperatures. Both are scheduled for use in commercial production this year.

Atmospheric moisture causes a surface reaction on a transistor's germanium crystal. This has been troublesome in that it may greatly reduce the amplifying action of a transistor, sometimes resulting in complete failure.

Sylvania engineers found special heat treatment of the germanium in molten potassium cyanide very effective in preventing this action.

Another problem is that present germanium transistors will not operate efficiently if the crystal is heated above 212°F. Silicon



will operate at higher temperature but lacks many of the desirable electrical characteristics of germanium.

By alloying the two, laboratory transistors have been made that operate effectively up to 350°F.

In showing these developments to high-ranking military officials in Washington last week, Sylvania engineers dunked an unsealed transistor using stabilized germanium in running water. They applied a burning match to another made with the germanium-silicon alloy. Electronic testing showed continued operation at high efficiency.

STEEL: Boost Grain Oriented Output

More mills entering grain oriented silicon market . . . U. S. Steel plans 35,000-ton annual capacity . . . Others studying field . . . Costs high, demand rising—By *J. B. Delaney*.

Everybody wants to join the act.

Brisk demand for grain oriented silicon steel and prospects of a steady market through 1960 promise to bring new producers into the field and create highly competitive conditions within the next 2 years, maybe sooner.

As of now the only producers of consequence are Allegheny Ludlum Steel Corp. and Armco Steel Corp. It's been that way for about 15 years. Other mills have stayed away for various reasons, including patents, tricky problems in making the product, and cost of necessary equipment.

Others Enter Field

But the picture is changing.

U. S. Steel Corp., which has produced grain oriented in limited quantities, is getting into the market with both feet. It is equipping its Vandergrift, Pa., plant to produce at the rate of 35,000 tons per year.

A second company not now making silicon steel in any form may announce any day its entry into the grain oriented sweepstakes.

Two other producers of silicon in lower grades—Wheeling and Republic are seriously considering addition of grain oriented to their product line.

Predict Higher Demand

One factor that may limit the number of producers is the high cost of equipment. One source estimates an investment of $35 million is required to get into production on a minimum basis. A figure of $17 million is mentioned for U. S. Steel's Vandergrift program, but some sources indicate the ultimate investment may be double that.

A recent survey pegs grain oriented silicon steel capacity at approximately 150,000 tons per year, including the 24,000 to 30,000 tons to be added this year by Allegheny Ludlum. The figure does not include U. S. Steel's 35,000 tons, which probably will come in late this year or early next. Armco also is known to be considering more capacity.

How It Works

Market projections covering the years 1953 through 1960 indicate an average yearly demand of 110,000 tons with possible peaks of 140,000 tons in some years. Estimates of shipments in 1952 range between 125,000 and 140,000 tons.

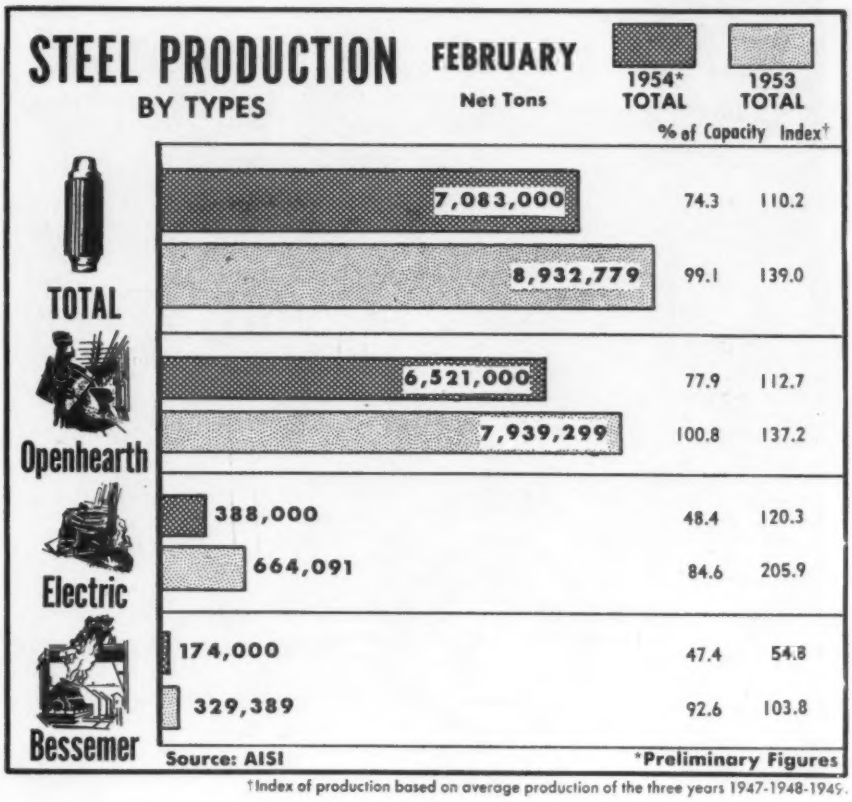
With U. S. capacity at end of this year certain to approach 200,000 tons, the market is bound to become more competitive. On top of this, England and France are known to have a capacity of about 25,000 tons and producers are worried that foreign competition may become a factor here.

Demand for grain oriented has risen steadily since its introduction in this country in the late 1930's. The only dip was during the "recession" of 1949, and that was short-lived.

Due to its peculiar magnetic properties, grain oriented silicon steel is used virtually 100 pct by the nation's electrical transformer manufacturers. Says E. J. Hanley, president of Allegheny Ludlum: "By special rolling and annealing techniques we have brought about physical changes in the crystal structure of these steels to permit the magnetic flux to flow more easily in the direction of rolling. The transformer manufacturer . . . has been able to modify his design to take advantage of this peculiar characteristic. Transformers of a given physical size may now carry more efficiently up to almost 50 pct greater load than was the case before this material was developed."

Motor Use Possible

Application of grain oriented to electrical rotating equipment would expand the market potential two to three times, but producers and users are just about convinced that the limited gain in efficiency would



†Index of production based on average production of the three years 1947-1948-1949.

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—Production—

not be enough to outweigh higher cost of the material over grades now used for this purpose.

The one exception may be in the larger types of rotating equipment. General Electric has been trying it out in turbine generators, and reports indicate that in equipment of this size the desirable directional properties of grain oriented can be utilized. In smaller equipment this is possible only to a limited degree.

—Transportation—

Railroads:

Class I lines haul more tons per train faster in 1953.

More cars, greater tonnage and higher average speeds set new efficiency records for Class I U. S. railroads in 1953, according to figures recently reported by Assn. of American Railroads.

In 1953 Class I railroads moved an average of 23,443 net ton-miles of freight per train hour. This was more than three times the 1920 average, one-third above 1943's and an increase of 878 net ton-miles above 1952's.

Average freight speed in 1953 was greater than ever, amounting to 18.2 mph. In 1952 the average was 17.6 mph, while 1943's average was 15.4 mph. The 1953 average was an increase of 77 pct over 1920's, 18 pct above 10 years ago.

Class I freights pulled an average of 63.2 cars in 1953 compared with 61.6 cars in the preceding year and 35.6 cars in 1920.

The roads also established a new record in the average speed of passenger trains. Average for locomotive - propelled passenger trains between terminals was 40.7 mph in 1953, compared with 39.9 mph in 1952.

Deliveries of new freight cars continued to slump, dropping to 3974 in February—lowest since September 1952.

New orders were placed for 2057 units during the month, according to a joint report by carbuilders and the railroads. Backlog of orders now stands at 25,441 as of Mar. 1, compared with 71,883 for the same date last year.

Minimum Wage:

Wage specifications are to protect workers, not contractors.

Minimum wage specifications in invitations to bid on government contracts are included to protect workers from substandard earnings, not to benefit contractors.

This is the U. S. Supreme Court position on minimum wage notices appearing in federal advertisements for bids. The position was stated by Chief Justice Warren last week in connection with a flood control project started in 1941 on the Chemung River at Elmira, N. Y.

Corps of Engineers included in its bid advertisements a notice that wage rates then prevailing were $1 per hour and 50¢ per hour for carpenters and laborers, respectively. This information was provided by the U. S. Secretary of Labor.

Successful bidder was the Binghamton (N. Y.) Construction Co., which subsequently found it had to pay $1.12½ an hour for carpenters and 62½¢ an hour for laborers. The firm sued the government to recover the difference, lost the decision.

Bargaining:

NLRB will decide if employee repudiated union can bargain.

Up to the U. S. Supreme Court is the job of deciding whether a union may continue to bargain for "a reasonable time" on behalf of employees who repudiate it after voting for it.

The court will rule on a case appealed by Ray Brooks, Van Nuys, Calif., auto dealer, who was charged by National Labor Relations Board of engaging in an unfair labor practice. Brooks employs 15 persons.

In an NLRB election in April, 1951, the employees chose the International Assn. of Machinists as their bargaining agent. A week later, Brooks received a letter from nine employees declaring they did not want to be represented by Local 727 of the union. The union was notified similarly.

Brooks thereupon refused to negotiate with the union on contract terms. NLRB decided his action violated the Taft-Hartley Act, but two U. S. Circuit courts have failed to agree with each other on that decision.

A long-standing NLRB rule states that once employees have chosen a union the selection stays in effect for "a reasonable time," regardless of an employee challenge. As a matter of practice, a year has come to be considered "reasonable."

Construction

Contracts:

Dodge reports 2-month total awards 9 pct above record.

Added confirmation that 1954 will mark history's biggest year in construction has come from two more sources: F. W. Dodge Corp.'s February list of contact awards and the U. S. Chamber of Commerce.

Record-shattering February figures and red-hot January Dodge statistics combined to make the 2-month total of construction contract awards in the 37 eastern states the best January-February period yet in all three major categories.

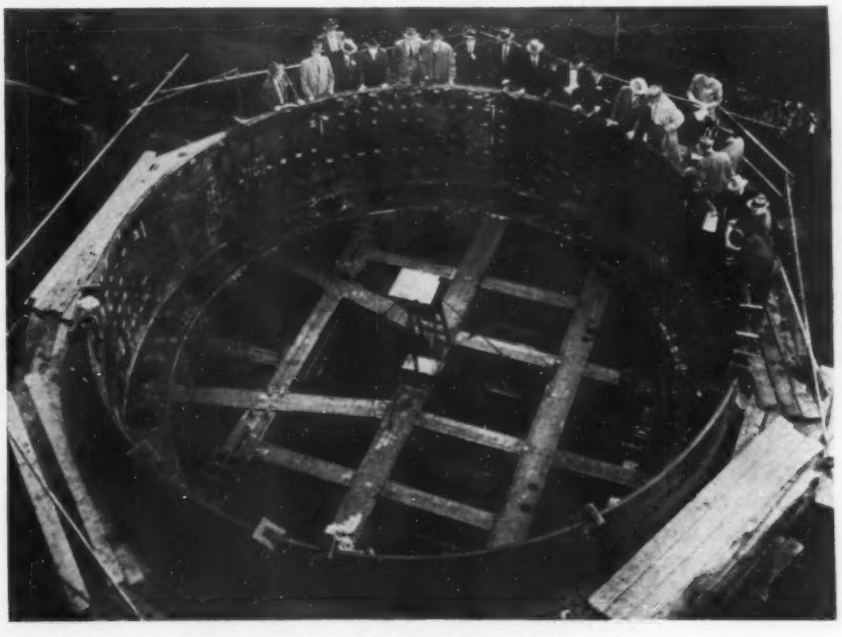
Nonresidential awards in February were $468,712,000, bringing the 2-month total to $941,789,000. In the residential category, February's $508,773,000 brought the 1954 tally so far to $971,255,000. February heavy engineering awards of $243,775,000 hefted the year's total to $460,203,000.

$2.4 Billion in 2 Months

Gross figure for February was $1,221,260,000; for the 2-month period it was $2,373,247,000—9 pct ahead of the alltime high recorded in January and February 1951.

In commercial construction alone, U. S. Chamber of Commerce predicts the '54 total will be at least 10 pct ahead of last year's record $2.2 billion. This covers three groups: (1) office buildings, loft buildings and warehouses, (2) stores, restaurants and garages, and (3) hotels, motels and commercial recreation buildings. Expected total is over $2.4 billion.

The Chamber stresses that two characteristics of the boom are huge expansion of office buildings and a wave of shopping center construction. The latter, states the Chamber, has been greatly stimulated by dispersion of new housing since World War II and the vast increase in automobiles in recent years.



TUNNEL SHIELD for building third tube for New York's Lincoln Tunnel is inspected at American Locomotive's Schenectady shop.

NEW DEPUTY Defense Secretary Robert B. Anderson (left) congratulated by Charles E. Wilson as resigning Roger M. Kyes looks on.

Expect No Big Changes In Defense

New Secretary is administrator; Kyes was production expert . . . Procurement will continue as planned . . . Will spend about $35 billion per year—*By R. M. Stroupe.*

Indicated by the nomination last week of Navy Secretary Robert Anderson to succeed Roger Kyes as Deputy Defense Secretary is a Pentagon belief that major military production snarls have been untangled, leaving the way open for skilled management of a going operation.

Mr. Kyes brought to his post as the next-to-top man in the Defense Dept. plentiful experience in car and truck production. To insure that sufficient weapons and other supplies of the right type will be turned out, he took on the problem of tying in defense orders with the "long term" requirements for constant prepardness.

Stepped on Toes

Mr. Kyes necessarily stepped on a few toes in the Pentagon in getting his job done, but his effectiveness is now uncontested.

As the successor to Mr. Kyes, Mr. Anderson enjoys a reputation as a highly capable administrator and department head. In his year as Navy Secretary, he learned much that is expected to aid him in providing firm direction and control to the vast defense production set-up.

Anderson Is Administrator

The new Deputy Secretary had had no experience as a Navy executive official until he was appointed to head the department last year. He had been a lawyer and educator in Texas, where he was general counsel for interests operating a ranch described as the second largest in the state.

Selected to take over Anderson's former job as Navy Secretary is Charles S. Thomas, now Assistant Defense Secretary for Logistics.

Under Mr. Anderson's management, procurement will continue at about the same rate and in the same pattern established by Roger Kyes. Probably a little more emphasis will be laid on procurement in the areas of electronics and guided missiles. Buying in these two areas probably will be a little ahead of this year's rate.

In the housekeeping department —soft goods, ammunition, motor vehicles—the spending levels will be down. Army, Navy, and Air Force all have healthy inventories.

The federal budget provides about $31 billion in new spending authority. The Defense Dept. will move into the new fiscal year with a carryover of about $8 billion in uncommitted funds. This makes the total for spending about $39 billion. New obligations, however, are not likely to run above $36 billion. This means that for the next 2 to 4 years defense procurement is to remain around $35 billion annually. Actual spending, in view of the backlog, may run slightly higher.

Contracts Reported Last Week

Including description, quantity dollar values, contractor and address. Italics indicate small business representatives.

Spare parts for roadgraders, 279 itm, $69,105, Galion Iron Works & Mfg. Co., Galion, Ohio.

Rotating band, 10,000, $48,305, Janney Cylinder Co., Holmesburg, Phila., Pa.

Pump assy, 377, $220,545, Vickers, Inc., Detroit, Mich., *R. M. McCabe.*

Refueler aircraft truck mounted, 59, $303,030, Columbian Steel Tank Co., Kansas City, Mo.

Dummy nose fuzes, 442000 ea, $146,178, Columbus Production Mfg. Co., Columbus, Ohio.

Spare parts for transmission assy., var, $95,361, Allison Div. GMC, Indianapolis, Ind., *H. S. Bowden.*

Cartridge ball carbine, 24655200 rds, $1,128,221, Remington Arms, Bridgeport, Conn.

Wind direction and speed indicators, 789, $256,810, Friez Instrument Div., Bendix Aviation Corp., Baltimore, Md.

Shell, chemical, metal parts assembly, Rheem Manufacturing Co., Richmond, Calif., *W. H. Innis.*

Carrier snowplow, 59 ea, $740,450, Oshkosh Motor Truck, Inc., Oshkosh, Wis.

Tank, 90 MM Gun, T48, 292, $245,776, Ford Motor Company, Dearborn, Mich., *F. B. Christian.*

Parts, repair for 2½ ton truck, 17829 ea, $81,953, Reo Motors, Inc., Lansing, Mich.

Stands, test, aircraft hydraulic components, 31 ea, $296,110, Greer Hydraulics, Inc., Brooklyn, N. Y., *Paul A. Williams.*

Cylinder liners, valves, impellers, crankshafts, etc., 1032 ea, $83,513, Hardie-Tynes Mfg. Co., Birmingham, Ala.

Transmissions, 10, $71,000 Allison Div., GMC, Indianapolis, Ind., *H. S. Dowden.*

Engine, 3, $93,600, McKenzie Awning Co., Detroit, Mich.

Clutch assy, boom assy, transmission, var, $5,439,528, Hiller Helicopters, Palo Alto, Calif.

Maintenance parts for HSL-1 aircraft, var, $78,463, The Cleveland Pneumatic Tool Co., Cleveland, Ohio.

New Handling System Speeds Production of Grinnell Fittings

Until Grinnell Company switched from hand trucks to dependable Lewis-Shepard SpaceMaster Model "E" Electric Trucks, it had a tough problem handling small castings coming out of the foundry.

Before SpaceMasters . . .

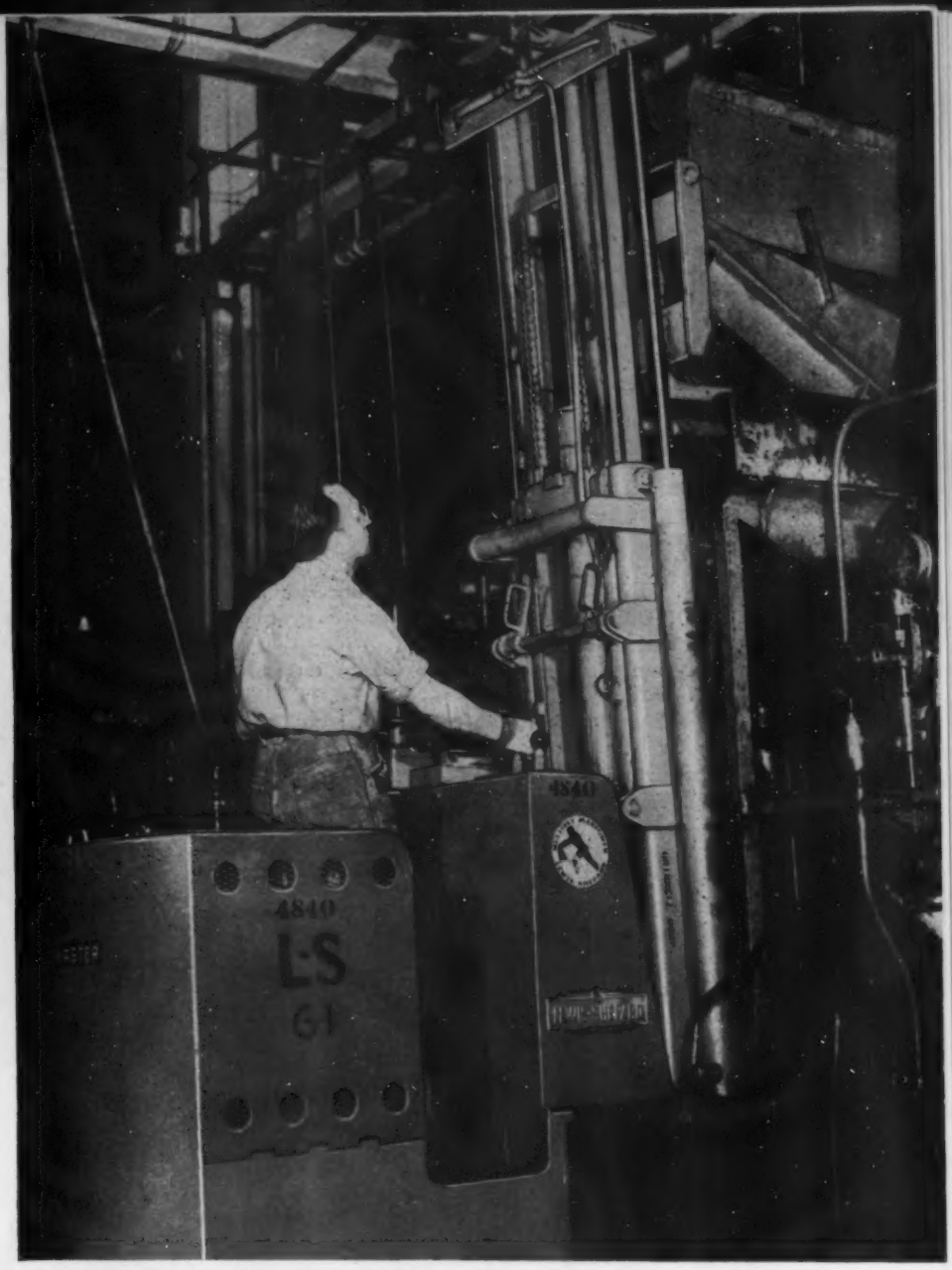
These space-eating, non-stacking shop barrels caught castings at end of foundry conveyor. Man with 2-wheeled hand truck lugged full barrel to a grinding machine. Machine operator, according to a Grinnell engineer, " . . . worked with one arm and his head in the barrel, his other arm in the machine."

After SpaceMasters . . .

Drop-bottom boxes catch castings from foundry conveyor. Lewis-Shepard Model "E" picks up box, carries it to a grinding machine, lifts it above feed hopper and dumps castings. Boxes can be stacked, stored efficiently.

About this Truck . . .

Lewis-Shepard's Standrive design permits safer trailing of load — operator has full, easy visibility to rear. Center control gives operator all 'round protection, permits him to get on and off quicker. Capacities to 4,000 lbs.



Lewis-Shepard SpaceMaster Electric Fork Truck lifts drop-bottom box to dump castings into feed hopper at a tapping machine.

The results at Grinnell, where manhandling was eliminated, storage efficiency improved and costs lowered, can point the way to greater efficiency for you. For full information regarding the cost-saving materials handling equipment from Lewis-Shepard, call your local L-S Representative or mail the coupon today. Case history Proof Folders include facts, figures and familiar company names. Handy Comparison Charts that help you to make your own decision are yours for the asking.

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Listed are some current L-S reorders from blue-chip companies in various industries.

Motor Car	45 L-S in use — reordered	2
Grocery Chain	73 L-S in use — reordered	6
Chemical	14 L-S in use — reordered	5
Elec. Goods	194 L-S in use — reordered	14
Carbon Mfr.	23 L-S in use — reordered	4
Mfg. Chemicals	74 L-S in use — reordered	6
Glass Mfr.	12 L-S in use — reordered	12
Rubber Goods	5 L-S in use — reordered	5

Name .....

Company .....

Address .....

City ..... State .....

Industrial Briefs

Plans to Move . . . THE PLUME & ATWOOD MFG. CO., Waterbury, Conn., plans to move the Fabricating Div. to Thomaston, Conn. Construction of a single story 150,000-sq-ft building is called for.

First Century . . . ROOTS-CONNERSVILLE BLOWER, a division of Dresser Industries Inc., Connersville, Ind., is celebrating its 100th anniversary this year.

Capacity Up . . . INTERNATIONAL NICKEL CO. OF CANADA is enlarging concentrator capacity at the Creighton Mine, Copper Cliff, Ont., to 12,000 tons daily. The mill building was enlarged and two crushers were added to the original four. Thirty-six flotation machines were also added, bringing the total to 180.

New Address . . . LACLEDE-CHRISTY CO.'s new address in St. Louis is 2000 Hampton Ave.

More Space . . . HY-PRO TOOL CO., New Bedford, Mass., plans an approximate 50 pct increase in the plant's manufacturing floor space.

"Play It Safe" . . . Foundrymen at the FOUNDRY CONGRESS SHOW in Cleveland, May 8-14, will see a new safety motion picture, "Play It Safe," which shows how proper usage can prevent one of industry's most dreaded accidents—the "bursting" of a damaged grinding wheel rotating at thousands of surface feet per minute.

Warehouse . . . BRASS & COPPER SUPPLY CO., Baltimore, Md., has purchased a new warehouse property located at the southwest corner of West 23rd and Sisson St. After alterations are completed, it will replace the present warehouse in downtown Baltimore.

Elected . . . CUTTING TOOL MANUFACTURERS ASSN., Detroit, has elected Robert H. Wolfe of Arrow Tool & Reamers Co. president.

Completed . . . DETROIT STAMPING CO. recently completed the latest of its plant expansions. The recent building enlargement of 11,000-sq ft gives greater working space in shipping, storage, production and die departments.

Wisconsin Distributor . . . MARION POWER SHOVEL CO., Marion, Ohio, has appointed Cunningham-Ortmayer Co., Milwaukee, a distributor.

French Visitors . . . ASSN. OF CONSULTING CHEMISTS & CHEMICAL ENGINEERS will hold an informal luncheon at the Park Sheraton Hotel, New York, Apr. 7 for a visiting group of French consulting engineers arriving in the U. S. in April to meet with a representative group of Assn. members.

They Remember . . . ROBERTSHAW THERMOSTAT DIV. of Robertshaw-Fulton Controls Co. has received a Veterans of Foreign Wars award for its services to returning disabled war veterans and other veterans. More than 800 veterans are at work in the Youngwood, Pa., plant, or 40 pct of the total employees.

First Truckload . . . WORTHINGTON CORP. loaded and shipped the first truckload of Worthington Air Conditioners from the new Decatur, Ala., Works to Biggs Pump & Supply Co., Lafayette, Ind.

Gets Order . . . WESTINGHOUSE ELECTRIC CORP., Pittsburgh, has received a $3 million order to build electrical equipment for 100 new subway cars for the New York Transit Authority. Order was placed recently by the American Car & Foundry Co., builders of the cars.

Distribution Depot . . . READING TUBE CORP. opened a new distribution depot in Cleveland. Distribution center is capable of warehousing a complete stock of tubing and pipe and will provide improved delivery service to Ohio and to parts of Michigan.

"The opportunities for advancement here are exceptional—the boss has three marriageable daughters."

Rep Appointed . . . The Promat Div. of POOR & CO., Waukegan, Ill., has appointed Industrial Materials Co., 383 Brannan St., San Francisco, as Northern California distributor for PROMAT metal finishing processes.

Opening . . . JOY MFG. CO., Pittsburgh, will open a new district office at 2410 Terminal Tower, Cleveland, on Apr. 1, for more convenient sales and service to the industrial, construction, quarry, and metal and nonmetallic operations in the Ohio-Michigan area.

Hear Ye . . . NATIONAL AUTOMOBILE DEALERS ASSN. has appointed Ralph K. Hoitsma to the staff.

Exclusive . . . MORSE CHAIN CO. named Power Transmission Equipment Co., Chicago, as an exclusive Chicago area distributor of Morse mechnical power transmission products.

Changes Name . . . THE AIROYAL CO., New York, is the new name of Compressed Air Products. The name "AIROYAL" was chosen as being more descriptive of the company's operation than the original name.

Awarded . . . AMERICAN GEAR MANUFACTURERS ASSN., Pittsburgh, has named Admiral Paul F. Lee, USN Retired, as the recipient of the 1954 "Edward P. Connell" Award. The Award is given to an individual who has made noteworthy contributions to the gearing art and industry.

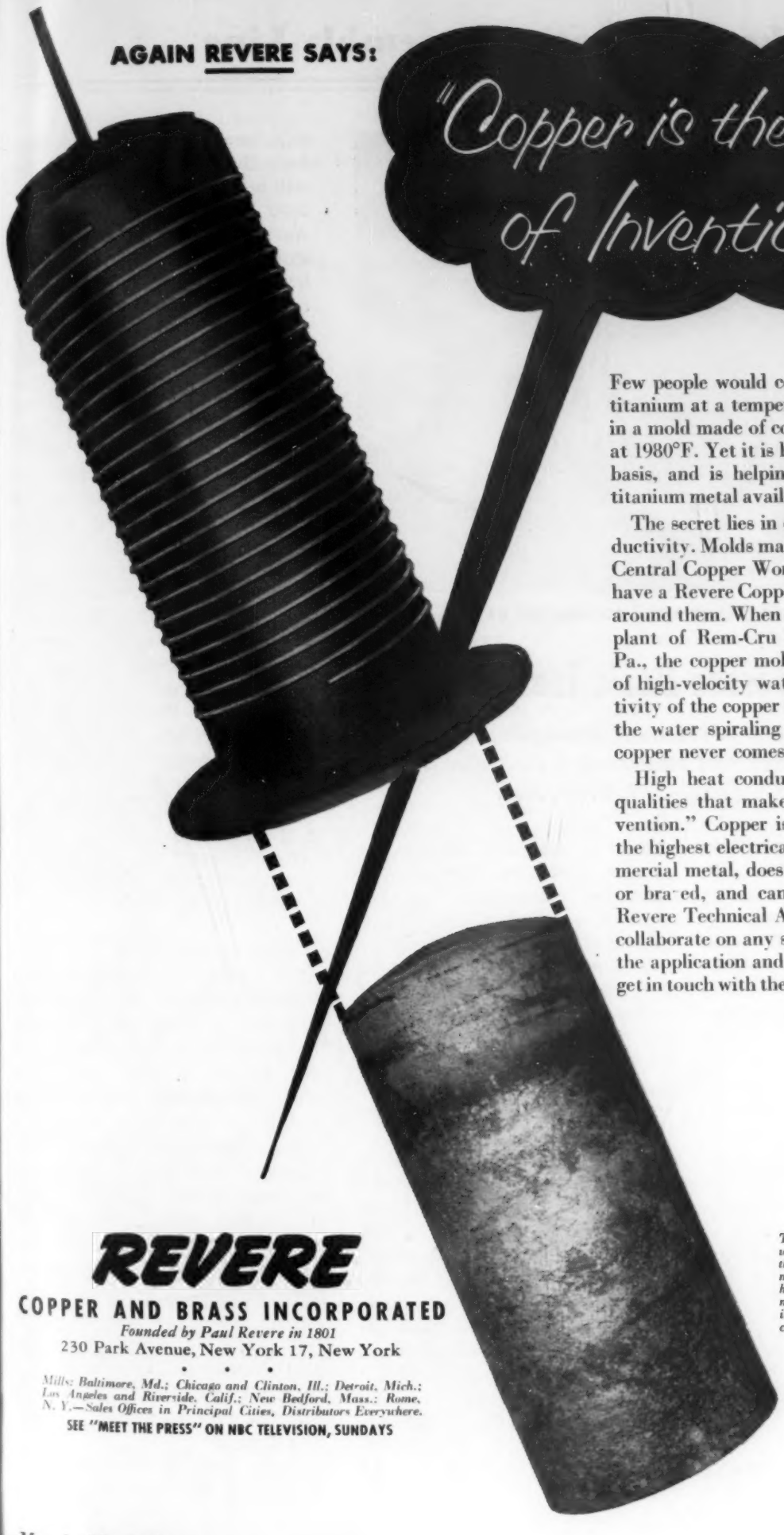
New Movie . . . JONES & LAMSON MACHINE CORP. has completed a new threading film. The film is on 16 mm colored sound film and will be available on a loan basis.

Australian Visit . . . Walter S. Praeg, president of NATIONAL BROACH & MACHINE CO., Detroit, left recently on the first leg of a trip to visit industrial firms in Melbourne and Sydney, Australia.

Appointed . . . ALDEN EQUIPMENT CO., Los Angeles, has been appointed as Southern California and Arizona representative for Mechanical Handling System, Inc., Detroit.

AGAIN REVERE SAYS:

"Copper is the metal of Invention!"



Few people would consider it possible to melt titanium at a temperature of 3140°F. or above in a mold made of copper, a metal which melts at 1980°F. Yet it is being done on a production basis, and is helping in the work of making titanium metal available on a commercial basis.

The secret lies in copper's high thermal conductivity. Molds made of Revere Copper by the Central Copper Works, Inc., Cincinnati, Ohio, have a Revere Copper baffle wrapped in a spiral around them. When installed in its jacket in the plant of Rem-Cru Titanium, Inc., Midland, Pa., the copper mold is connected to a source of high-velocity water. The high heat conductivity of the copper transfers heat so rapidly to the water spiraling along its surface that the copper never comes close to its melting point.

High heat conductivity is only one of the qualities that make copper "the metal of invention." Copper is also easily workable, has the highest electrical conductivity of any commercial metal, does not rust, is easily soldered or brazed, and can be welded perfectly. The Revere Technical Advisory Service will gladly collaborate on any special problems concerning the application and fabrication of copper. Just get in touch with the nearest Revere Sales Office.

Titanium ingot, 25" in diameter, 51" long, weighing 4,050 lbs., melted at 3140° F., and the water-cooled copper mold, which would melt at 1980°F. if it were not for copper's high heat conductivity. The flange on the mold is steel, welded to the copper by the inert gas shielded arc method, using silicon copper rod.

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, New York

• • •

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.—Sales Offices in Principal Cities, Distributors Everywhere.

SEE "MEET THE PRESS" ON NBC TELEVISION, SUNDAYS

Nash turns headlights on small car market as . . .

Bargain Car Stresses Basic Transport

Nash eliminates frills for economy Metropolitan . . . Won't replace family buggy, will supplement it . . . Price is $1445 . . . Will be made in England—By *R. D. Raddant*.

The new Nash Metropolitan might be called an American car with an English accent.

This little bargain buggy is unique in several concepts, in its American engineering, European manufacture, and in its attempt to create or discover a market that is uncovered by U. S. built cars.

No Little Big Car . . . It is much smaller than the Rambler, Henry J or Willys and is intended to provide basic transportation at a minimum of cost.

The basic difference between the Metropolitan and other small cars that have failed here is that others attempted to condense a big car with all its features into a small car size. This resulted in a car of moderate size, but with just as many parts and features as a larger one. A really low price never was realized.

Will Sell for $1445 . . . Nash engineers used the opposite approach in designing the car, beginning with the simplest and most basic transportation. The result is the Metropolitan, 54½ in. high, built on an 85 in. wheelbase, and powered by a 42 hp Austin A-40 engine. It is not expected to replace the family car, but to provide an inexpensive car, economical to operate, that is ideal as a supplementary car or where transportation needs are limited to its size and performance.

Price of hardtop Metropolitan is $1445; the convertible is $1469. Prices are f.o.b. coastal port of entry and include at no extra cost many custom appointments—such as continental rear tire carrier, directional signals, cigarette lighter, genuine leather and nylon upholstery, foam rubber cushions, electrically operated windshield wipers and sun visors.

But why the English accent? Although designed by Nash engineers, the Metropolitan will be manufactured for Nash in Birmingham, England. The "unitized" body that was developed by Nash will be produced by Fisher & Ludlow, Ltd. with car assembly by Austin Motor Co., Ltd., both divisions of British Motors Corp., the largest automobile manufacturing combine in Europe.

Cheaper for Short Runs . . . The answer lies in economics. Nash found it more economical to tool up in England for the experimental run. Body tools cost slightly over $1 million and the entire tooling program somewhat over $2 million, much less than it would have cost here. The big saving to the company is in the engine.

No U. S. engine maker has anything like the Austin A-40 engine which was practically tailor-made for the Metropolitan. For only the 10,000 cars that Nash has contracted for in the initial program, it would have been completely prohibitive to design and tool up for an engine in the U. S.

However, Mr. Mason implied that if the market does develop, say to 100,000 a year, Nash would then move in with its own engine and body program.

Hope to Sell 10,000 . . . Nash officials, while reluctant to give comparative costs for obvious reasons, admitted that if the body was built in Nash plants here with only the engine imported, even considering duty and freight the car would cost more to the purchaser.

Nash engineers told THE IRON AGE that Austin has more automatic assembly operations than automakers in this country. This is because British automakers aren't confronted with annual model changes.

Nash plans to release 10,000 into the U. S. They will not be sold elsewhere. The price will be f.o.b. at port of entry. They are arriving now at a rate of 50 to 60 a day.

Going back to the car itself, Nash engineers believe that it is

good for 100,000 miles with good care and one top overhaul. It has tested out well in Nash test runs and can make 70 mph at top speed and performs well at 60 to 65 for extended runs. At normal highway speeds it will yield 40 miles per gal.

Sales:

GM sets record sales, but earnings are third best.

Net sales of more than $10 billion during 1953 established General Motors as the biggest private corporation in terms of both sales and earnings.

A year ago, Harlow H. Curtice, GM's new president, estimated total business of $9 billion for the year. At that time, many financial authorities thought he was talking himself far out on a limb. However, the next 12 months proved his prediction to be conservative by a full $1 billion.

But in spite of the record sales, the highest in history for a private company, profits were only the third best for GM, proving that 1953 was a good year for business, but an expensive one to transact it in.

"Earnings continued to be adversely affected by excess profits taxes and in 1953 earnings were also affected by higher material costs, particularly higher premium steel costs, higher labor costs including large amounts for overtime premiums, and increased costs for special tools," the annual report stated.

Margin Takes a Dip

The fact that the auto industry will be out from under most of these detrimental factors in 1954 adds to the contention that this won't be a bad year for automotive stockholders in spite of the slump in sales. There will be exceptions, however, whose sales will be off too much to be offset by the better manufacturing conditions.

GM's net income amounted to $598 million, or about 6 pct of net sales of $10,028 million. In 1952, net sales were $7,549 million with net income of $559 million, or 7.4 pct of sales.

Here's what happened to most of the income of $10.116 billion GM gained from sales and other sources in 1953: $5,327 million was paid to suppliers; $2,776 million went to employees; $1,237 million went for Federal, state and local taxes; $178 million was set aside for depreciation; $326 million was distributed to GM shareholders; and $236 million was retained in the business.

Automotive Production

(U. S. and Canada Combined)

WEEK ENDING	CARS	TRUCKS
Mar. 13, 1954..	119,598	23,675
Mar. 6, 1954..	116,785	22,478
Mar. 14 1953..	134,152	31,610
Mar. 7, 1953..	128,511	30,314

*Estimated. Source: *Ward's Reports*

Detroit Notebook . . .

¶ Nothing in years has been so frustrating to the auto industry as the recent surge of "bootlegging"; the sale at a discount by a franchised dealer for resale by a used car dealer or discount merchant. Look for some strong, legal steps although there is some doubt how far the industry can go at disciplining the ranks.

¶ Ford dealers will soon offer a new convertible top actuator which automatically raises the top at the touch of a drop of rain. This will enable a convertible owner to park his car with the top down and not worry about rain.

¶ First Plymouths with PowerFlite automatic transmissions are now in sales rooms and one-third of Plymouth production is devoted to cars with automatic transmissions. This has been responsible for a second assembly line and the hiring of several thousand.

¶ Willys will double the capacity of the Shadyside, Ohio, press plant for automotive stampings by construction of a 22,000 sq ft addition and the installation of more than $1½ million in presses and auxiliary equipment which will be transferred from ill-fated operations at Willow Run.

THE BULL OF THE WOODS — **By J. R. Williams**

HERE IT IS--FIVE YEARS AGO HE WAS RUNNIN' OL' NO.9 LATHE HERE, AND HE'S NOW TH' CHIEF ENGINEER FOR ALL TH' VOT CO. PLANTS!
THAT GUY--WOW!
YE GODS! IN FIVE YEARS!
KNOW WHAT THEY'RE THINKIN'? "OH, IF I'D ONLY GOT OUT OF THIS DUMP BEFORE THEY TIED ME UP WITH A TIE AN' RUBBER HEELS!"
THEY GO THRU THAT TORTURE REGULAR! THERE'S ALWAYS SOMEONE DUMBER THAN YOU PASSIN' YOU!
3-26
J.R.WILLIAMS
HEROES ARE MADE-NOT BORN
T. M. Reg. U. S. Pat. Off. Copr. 1954 by NEA Service, Inc.

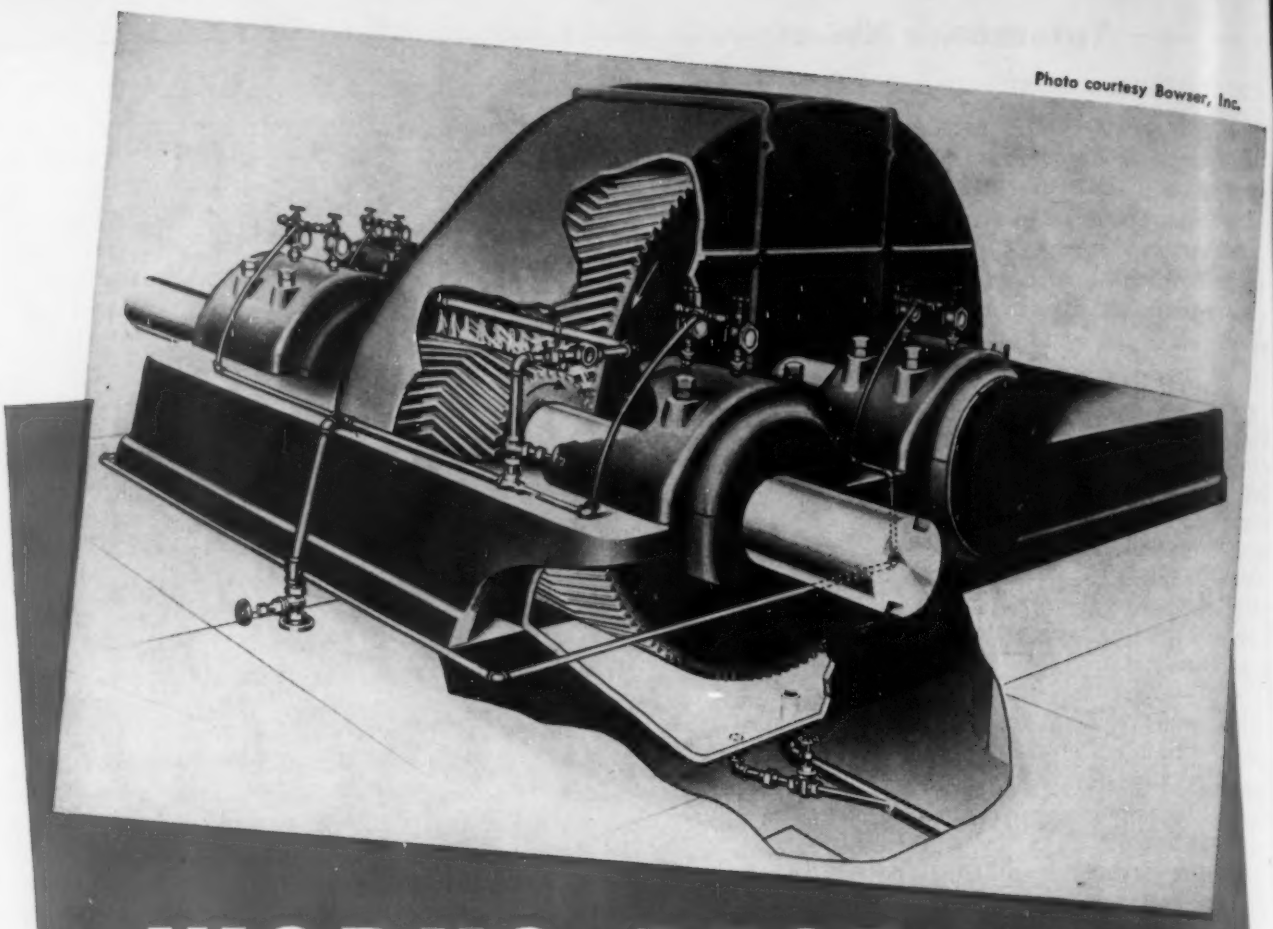


Photo courtesy Bowser, Inc.

WORKS BEST UNDER PRESSURE

THE lubricant for your enclosed reduction gears must be one that easily withstands extreme pressures. Use *Texaco Meropa Lubricant.* Its high and long-lasting EP properties make it tough, sturdy and wear-resistant – assure smooth, quiet operation – full protection even under the most severe service – lower maintenance costs.

Texaco Meropa Lubricants have extra resistance to oxidation and thickening. They will not foam, will not separate in service, storage or centrifuging. And you can depend on them to protect bearings from corrosion.

Lubricate oil film bearings on back-up rolls with *Texaco Regal Oil.* This heavy duty, turbine-quality oil effectively resists oxidation and sludging, saves you money because it keeps systems clean, bearings fully protected.

Let a Texaco Lubrication Engineer help you get greater efficiency and lower maintenance costs throughout your mill. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

TEXACO Meropa Lubricants

FOR STEEL MILL GEAR DRIVES

TUNE IN . . . METROPOLITAN OPERA radio broadcasts every Saturday afternoon. See newspaper for time and station.

Autos Bypassed On Excise Tax Cuts

Auto industry didn't demand tax reductions and Congress isn't voting them . . . Seek dredging of Delaware Channel . . . Census funds face tough fight—By G. H. Baker.

Excise tax reduction this year will provide a real lift for sales of more than a score of products and services, but the automobile industry is not now in line for any direct benefits of lower taxes. The reason: Detroit didn't come right out and demand tax reduction, and therefore Congress isn't voting any.

The industry's commendable desire to cooperate fully—too fully, perhaps—with the Eisenhower Administration on matters of national policy has caused it to miss the boat as far as reduction of automotive excises is concerned.

May Hurt Sales . . . The automobile industry admits it has been purposely inactive in the Washington battle for reduction of excises. Some in the industry believe that Detroit should have been hammering away at Congress for tax relief. Others point out that the Eisenhower Administration is the first "friendly" Administration in 20 years, and that some consideration should be shown for the Eisenhower-Humphrey fiscal views, including their stand against tax reductions now.

Position now taken by the industry is that if automotive taxes cannot be repealed or reduced this year they should at least be put on the same basis as other taxes. The excise reduction bill passed by the House and now before the Senate calls for the automatic reduction next Apr. 1 of excises applying to passenger cars, buses, trucks, truck-trailers, automotive parts and accessories, and gasoline. This is something to look forward to, but it could be damaging to this year's sales.

Question is, to what extent will prospective buyers postpone their purchases in anticipation of tax cuts? (Tax on a typical model of one of the Big Three low-priced makes is about $200.) Washington belief, however, is that few if any sales will be lost: Drivers intending to buy new cars this year are going to go ahead and buy them anyway—regardless of the promised tax cut next year.

Urge Deeper Delaware . . . Another $1 million worth of dredging in the Delaware River each year will open the door to many times that amount in new or expanded industrial output.

Army Engineers estimate the annual cost of maintaining a 40-foot channel in the Delaware at about $3.2 million, as compared with $2.1 million now being spent annually in keeping the channel open to a limited extent. Because of silting in recent years, it will cost an estimated $8.4 million to restore the river channel to its presently authorized 40-foot depth (as far as Philadelphia Naval Base).

This should not be confused with the $96 million plan to dredge a deep water channel to permit large ocean going vessels to navigate all the way to the Trenton Marine Terminal.

Congressmen point out that the initial outlay will be returned many times over to the Pennsylvania and New Jersey communities along the river, because low-cost ocean transportation will stimulate the growth of hundreds of large and small firms up and down the Delaware Valley.

Statistics Cost Money . . . Full-scale resumption of the federal census of manufacturers and transportation faces an uphill fight at the Capitol. A committee of businessmen has been urging Secretary of Commerce Sinclair Weeks to ask Congress for an $11 million appropriation for the censuses. Former President Truman early last year asked $21 million for this purpose. Congress voted none of it; finally agreed to a limited number of "spot checks" in order to keep the framework of the census operation together.

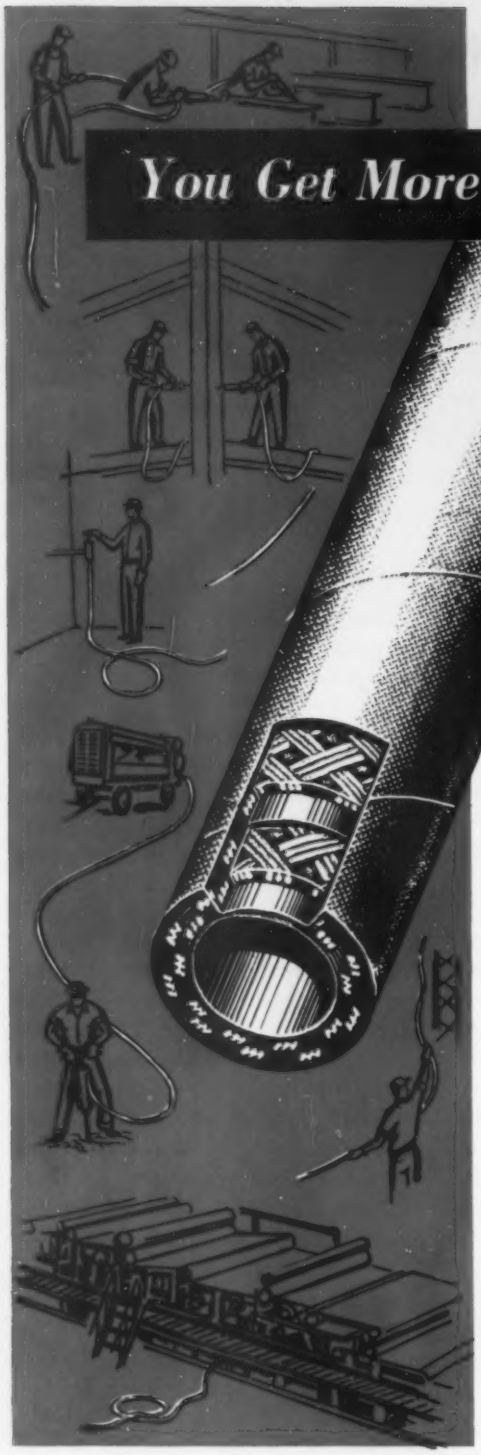
Secretary Weeks agrees with industry that these two censuses provide much valuable data on present and potential markets. He wants the Budget Bureau to okay his request for a limited appropriation of $8 million for the censuses. But even this relatively modest sum faces plenty of opposition from an economy-minded Congress.

Wants Sites . . . Army plans to buy sites for air-defense missiles within the city limits of Detroit, Pittsburgh, and Philadelphia at up to $1000 per acre now have the backing of the House Armed Services Committee.

The committee endorsed the plans last week after a subcommittee headed by Rep. Paul Cunningham, R., Ia., recommended approval.

Ike Doesn't Think It's An Asset

President Eisenhower discloses that he is not impressed by the arguments put forth by Texans for keeping the Texas City tin smelter in "forced draft" operation. Recently, a group of congressional leaders discussed with Mr. Eisenhower the Administration's list of "must" legislation, including bills providing for the sale of Reconstruction Finance Corp. assets like the Texas City smelter. At the mention of the smelter, Ike grinned and demanded to know who called the Texas City smelter an "asset."



You Get More Use per Dollar with Homoflex Hose

For air, water, other fluids and gases Homoflex Hose is
easier to handle because it has no pre-set twist,
coils and uncoils easily with no kinking,
is light in weight, yet strong, and
"Flexible as a Rope."

R/M Hose Engineering makes possible high flexibility . . .
homogeneous cover, strength member and tube
that are inseparable.

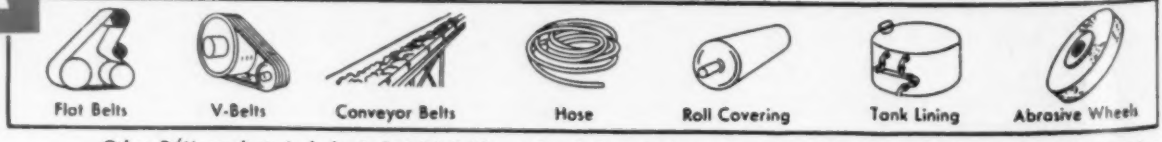
Homoflex Hose gives you
"More Use per Dollar" two ways . . .
men do more work with it . . .
and it lasts longer.

Ask the R/M Distributor for Bulletin 6879 . . .
and, don't forget, there's equally good
"More Use per Dollar" engineering in
All other types of R/M hose, conveyor belts,
V-belts and flat transmission belts.

RM

MANHATTAN RUBBER DIVISION—PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.



Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Brake Linings • Brake Blocks • Clutch Facings
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TAXES: Senate Holds $1 Billion Key

Excise reductions pass House . . . Now Senate must decide if government can afford to give up billion in taxes to spur consumer spending . . . No hope for corporate cuts.

The lower house of the Congress last week made good its promise to whack a big chunk from the consumer's tax burden on the theory it will produce both votes and a substantial shot in the nation's economic arm. But the 52 pct corporate rate will probably stay another year.

Big question now is: Will the Senate go along? Both the White House and Treasury say the House has gone too far.

Taxes or Spending Power?

In effect, the legislation now before the Senate sets a ceiling of 10 pct for all excises, automatically reducing any higher rate back to that level (THE IRON AGE, 3/11/54, p. 97). Excise rates at or less than 10 pct would be extended another year.

This means that John Q. Public would have roughly an additional $1 billion to jingle in his pocket. It is believed that most of it will go right back into the retail marts.

It is now up to the Senate to decide whether such a boost in purchasing power would be of more importance than a loss of a billion dollars in revenue to the government.

Retail Sales Look Strong

Some of the undecided have been watching the retail sales graph—a basic business barometer — for straws in the wind.

Commerce Dept. now reports retail sales for February as totaling roughly $12 billion, slightly less than January but about the same after allowing for the shorter month.

But the important thing, Commerce points out, is that retail sales showed less than a seasonal drop for the month and that sales of durables were 5 pct higher than normally expected.

Throughout February, the tax-writers were promising the buying public a tax bonus in the form of excise cuts in addition to income tax reductions. Experts are pondering whether this had a bearing on February retail sales.

Corporate Taxes To Stay

Meanwhile, on the House side of the Capitol the spotlight has shifted to the real battle—the second section of the tax program which involves a technical overhaul of the tax structure in general. It was scheduled to go before the whole House this week.

As approved by committee, the second bill is mostly in direction of tax relief with an important exception. It is proposed to extend the present 52 pct corporate rate for 1 year, until Apr. 1, 1955.

This is estimated to bring in about $2 billion, seen as badly needed since other provisions in the revised bill would result in a loss of approximately $1.4 billion.

A major technical revision would put large corporations—those subject to $50,000 or more in tax liability—on a partial pay-as-you-go basis.

While this would apply to only about 35,000 of 425,000 corporations, it would cover nearly 90 pct of the corporate tax take.

Another provision would provide for quicker write-offs generally for plants, equipment, and fixtures, extend the loss carry-back from 1 to 2 years, provide a lower rate on earnings from overseas investments, and make a start toward elimination of double taxation of dividends.

Will Study Union Welfare Plans

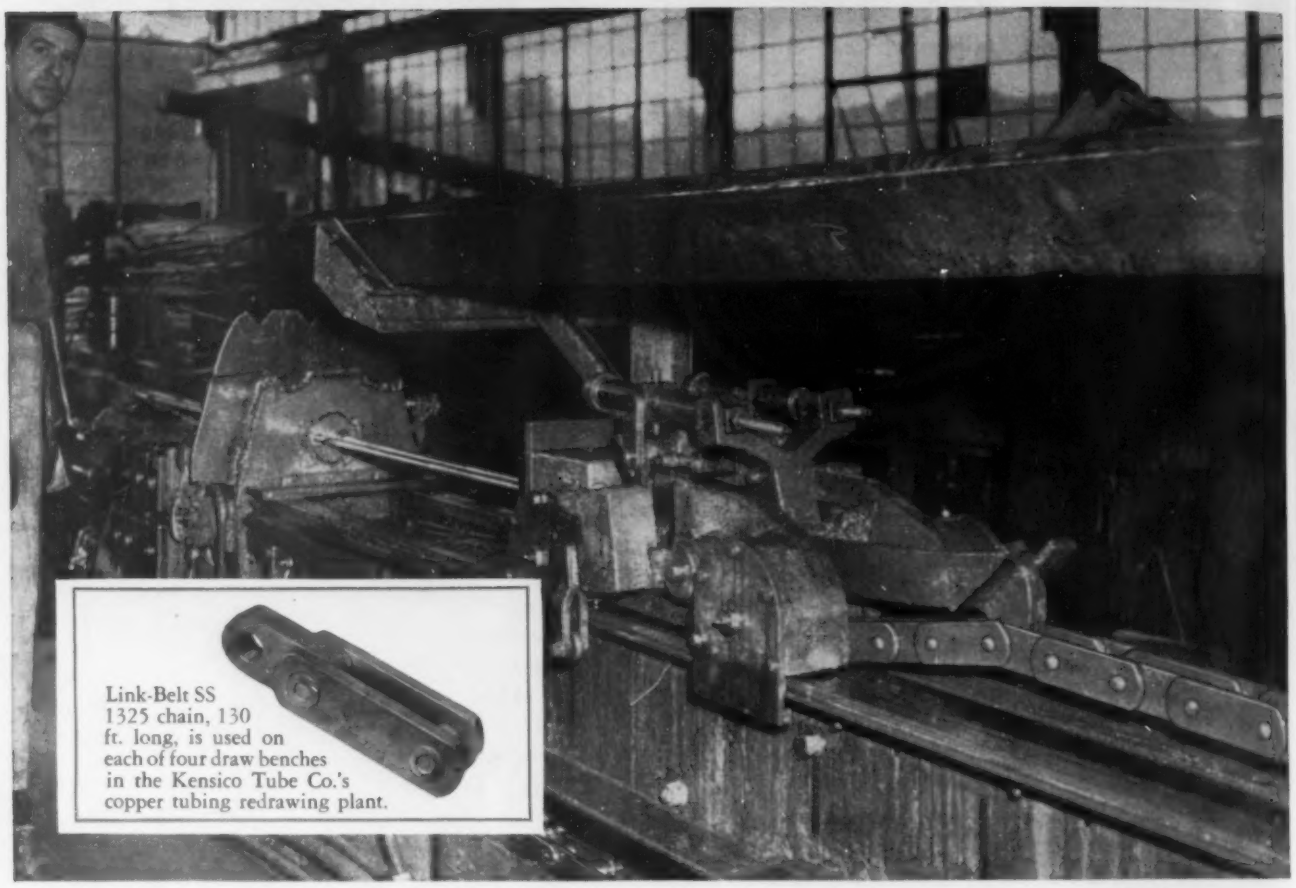
Union-administered welfare and retirement programs are in line for a thorough scrutiny by a sub-group of the Senate Labor Committee.

House Labor Committee already has opened an investigation of such programs, after receiving complaints that some welfare funds are being mishandled.

Sen. Irving M. Ives, R., N. Y., heads the special investigative subcommittee. The group will need a Senate authorization for funds.

HYDROGEN PEROXIDE supplies the oxygen for burning this British sub's fuel, permitting long submersion periods. It may be world's fastest sub.

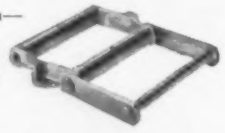
Here's why so many of the nation's draw benches use LINK-BELT chain



Link-Belt SS 1325 chain, 130 ft. long, is used on each of four draw benches in the Kensico Tube Co.'s copper tubing redrawing plant.

No ONE chain serves every purpose —get the RIGHT one from the complete line

Class H drag chain—for drag conveyors, handling shavings or other refuse in runways or troughs.



Class C combination chain—popular, durable, low cost design for elevators, conveyors.

LXS chain — particularly suitable for heavy-duty drive and conveying jobs.

Transfer chain with tilting dogs — for plate and slab travel, loads up to 300,000 pounds.

LINK-BELT offers the chain that's best for every job

WHETHER it's for a 5000 or a 100,000-pound bench, Link-Belt draw bench chain is built to maintain close pitch and correct sprocket contact. Links are accurately machined after hardening by a special process that assures longer chain life.

Manufacturing refinements such as these are typical of every chain in the complete Link-Belt line. Accurate control of raw materials and manufacturing processes is your assurance of uniformity.

For complete information on chains and sprockets for draw bench or any drive or conveyor service, see your Link-Belt sales representative. He can show you the *one* chain that's best for your requirements.

LINK-BELT

CHAINS and SPROCKETS

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Australia, Sydney; South Africa, Springs. Representatives Throughout the World.

See End of Downward Employment Trend

Latest West Coast employment survey shows drop of 196,000 since mid-December . . . But jobless increase due to Christmas layoffs . . . Metalworking strong—By *T. M. Rohan.*

A few business barometers were beginning to show a rise on the West Coast last week.

Latest employment reports through January indicated "the downward trend in jobs in Pacific Coast states evident since last October appears to have been checked," according to Max D. Kossoris, western regional director of the Bureau of Labor Statistics.

R. A. Livingston, president of the California Manufacturers Assn., said the group's quarterly poll just completed indicated no near-term reversal.

At Spokane, Kaiser Aluminum re-hired 185 men in the last 30 days at its sheet mill. This return to "a normal complement is due to a continued improvement in business conditions," the company stated.

Post-Christmas Drop . . . The latest Coast employment figures indicated an overall drop of 196,000 from mid-December, but two-thirds of the drop was in temporary Christmas employees. "Had the trend of the earlier months continued, January unemployment for the region would have been below that of last year. As it was, it ended up 25,000 higher," Mr. Kossoris said.

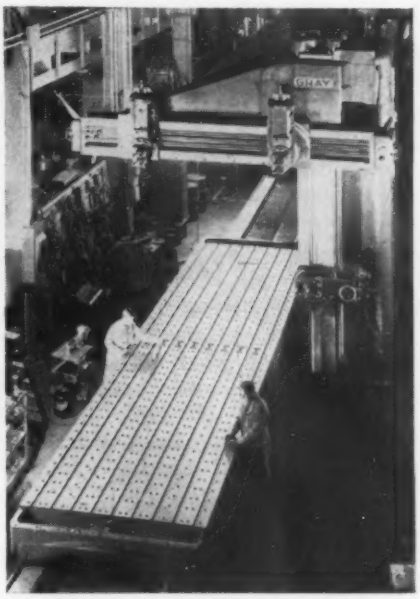
Metalworking and metal production fared well compared to overall employment trends. In the three-state area, January, 1954, employment was 137,100, a drop of 300 from December. In California metals fabrication, employment jumped 1500 over December to 69,700. In Washington, it stayed at 6000. In Oregon, both primary production and fabrication employment was unchanged at 7200.

Early February preliminary returns from Washington indicate increase of 100 to 11,900 in primary metals production.

Strike End Helped . . . "A small part of the reason for December-January uptrend was settlement of can-making and sheet metal work strikes," Mr. Kossoris said. "But in California, especially, the change is significant since the steady downtrend starting last September has been getting progressively smaller by the month."

The California Manufacturers' survey indicated that in the 3 months of December, January and February about 32 pct of the companies reduced inventories of manufactured products.

Answering the same question 12 months earlier only 21 pct of the companies surveyed reported a reduction in inventories.



SIX freight cars were needed to transport this 142-ton planer from G. A. Gray Co. to West Coast.

More Optimistic . . . The association said that in one respect there has been a slight but possibly significant change in executive opinion in the last 3 months. Asked about orders to be booked by their sales force, 24 pct of the companies indicated the volume expected in the second quarter of 1954 would be ahead of orders booked in the same '53 period. Three months earlier, 22 pct said they anticipated a sales increase.

Breakdown of answers to the questionnaire regarding second quarter business were:

(1) Will the dollar sales of your company during the second quarter of 1954 be more (24 pct), less (38 pct), or about the same (38 pct) as in the same quarter of 1953?

(2) Do you expect dollar volume of incoming orders during second quarter to be more (24 pct), less (42 pct), or about the same (34 pct) as in the second quarter 1953?

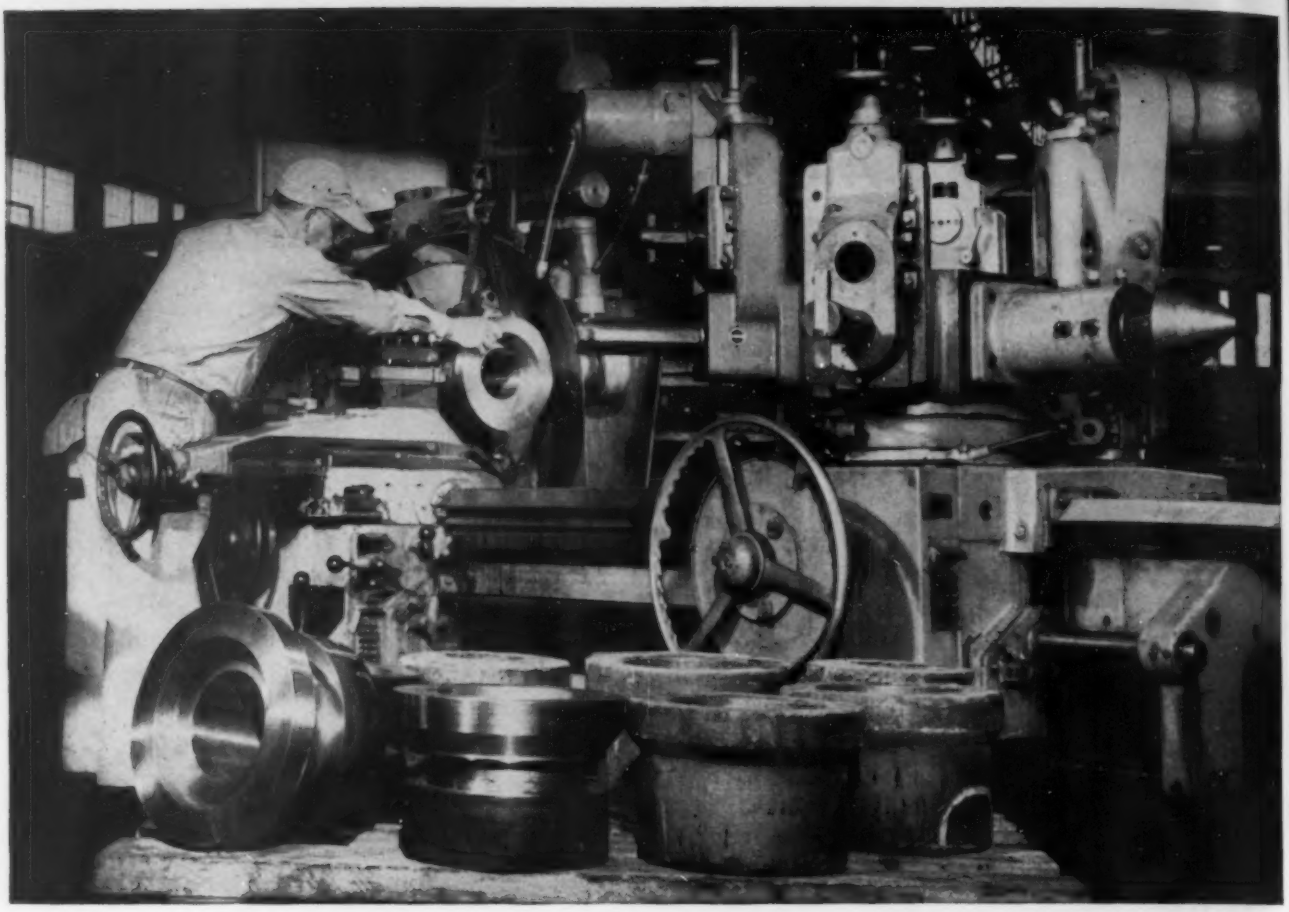
(3) Will the average number of employees on your payroll during the second quarter be more (14 pct), less (36 pct), or about the same (50 pct) as in the corresponding quarter last year?

(4) Is your company's dollar value inventory of finished products up (31 pct), down (31 pct), or about the same (38 pct) as in '53?

(5) Has dollar value inventory of finished products increased (23 pct), been reduced (32 pct), or remained relatively unchanged (45 pct) during the last 3 months?

Hot Road Bidding . . . Steel highway construction jobs in California's record-breaking 1954-55 construction plans (THE IRON AGE, Dec. 3, '53, p. 131) are attracting a record number of bidders. At a bid opening last week for a $2 million job at Salinas, Calif., there were 14 bidders compared to nine a year ago.

Lowest bid was by Gordon A. Ball Construction Co., San Francisco, at $1,926,723.



Machining time cut from 1 hr. 54 min. to 30 MINUTES!

HERE'S A GOOD EXAMPLE of what happens when a part is machined on the *right* machine with the proper tooling!

The machine was a new Warner & Swasey 4-A Turret Lathe installed in 1953 at the Emsco Manufacturing Company plant at Houston, Texas. It replaced an 8-year-old saddle type turret lathe.

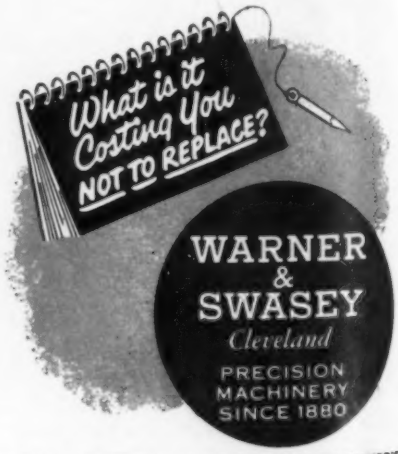
Previous time for machining a large steel forging was 1 hour 54 minutes. This involved boring a hole to .001" tolerance, facing the end, a two inch turning operation on the 11" O.D., single pointing a 30° angle two inches long, grooving a 1½" wide square groove on the O.D., and breaking the corners.

After the job was transferred to the new Warner & Swasey, and following the setup and tooling recommendations of our Field Engineer, *the operation was completed in 30 minutes!*

Another operation transferred to this Warner & Swasey was machined in one-fourth the previous time! On a third part the operator produced 13 hours' work in one shift!

Translating these time savings into production, Emsco reports that production of parts transferred to the Warner & Swasey has been increased by 32%. Operators like the machine's ease of handling and its ability to hog off metal.

This is a record of just one machine, but it emphasizes the profit possibilities open to you when the job is done on the *right machine*, properly tooled, and job-analyzed by a turning specialist . . . a Warner & Swasey Field Engineer. Call him in on your replacement problem. He's a good man to work with.



YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY

When Will Memory Devices Take Over?

When machines work faster than man can control them, automatic control is needed . . . Developments in England, U. S. . . . Renegotiation extension—By *E. J. Egan, Jr.*

Remember when the all-around machinist was the pride and joy of the machine shop? He was the only one who could look at a sketch someone had drawn on the back of an envelope, shift his cud of tobacco, and turn out a gleaming metal part with every dimension accurate to the ten-thousandth.

But times have changed. The all-around machinist is hard to find. His talents are jealously confined to the toolroom or experimental department and his place on the line has been taken by a specialist machine operator.

Not Good Enough . . . But the specialist operator, capable as he might be, is often not skillful or fast enough when it comes to mass production. Parts must not only be dimensionally accurate; they must be made at blinding speed. When a machine tool can work faster than a man can control it, the control system must become automatic. Trend is toward mechanical or electronic memory devices.

England's National Physics Laboratory, for example, is developing a tape recording technique to solve the control problem. Extreme accuracy is predicted, even for complex jig boring operations. System will use a principle of superimposed transparent gratings, an outgrowth of the diffraction gratings originally proposed as spectroscope components.

How It Works . . . If two finely ruled gratings are placed one upon the other with their rules inclined at a slight angle, dark lines or fringes are produced. When one grating is moved slowly across the other, the fringe lines move at a very rapid rate which can be counted electronically. With gratings ruled as fine as ten thousand lines to the in., the counter will record movement in ten-thousandths of an in.

It's no secret that U. S. firms are busy exploring ways to transmit machining data to metalworking equipment via punched tape and other memory devices.

General Electric is reported to be very active in this field, has already applied one such tape recorder to a milling machine.

Stopped Pool Orders . . . The government's General Services Administration suspended all new pool order commitments for machine tools in March, 1953. At that time, GSA pool order contracts numbered 114, called for manufacture of 93,613 machine tools with a gross value of $1.286 billion.

The pool order program guaranteed qualified builders of long lead-time equipment a market for their completed tools. GSA was committed to take all machines not sold to industrial buyers, and to pay builders 17½ pct less than their regular sales price which cut out builders' estimated profits and sales expenses.

"You know what's the matter with you?"

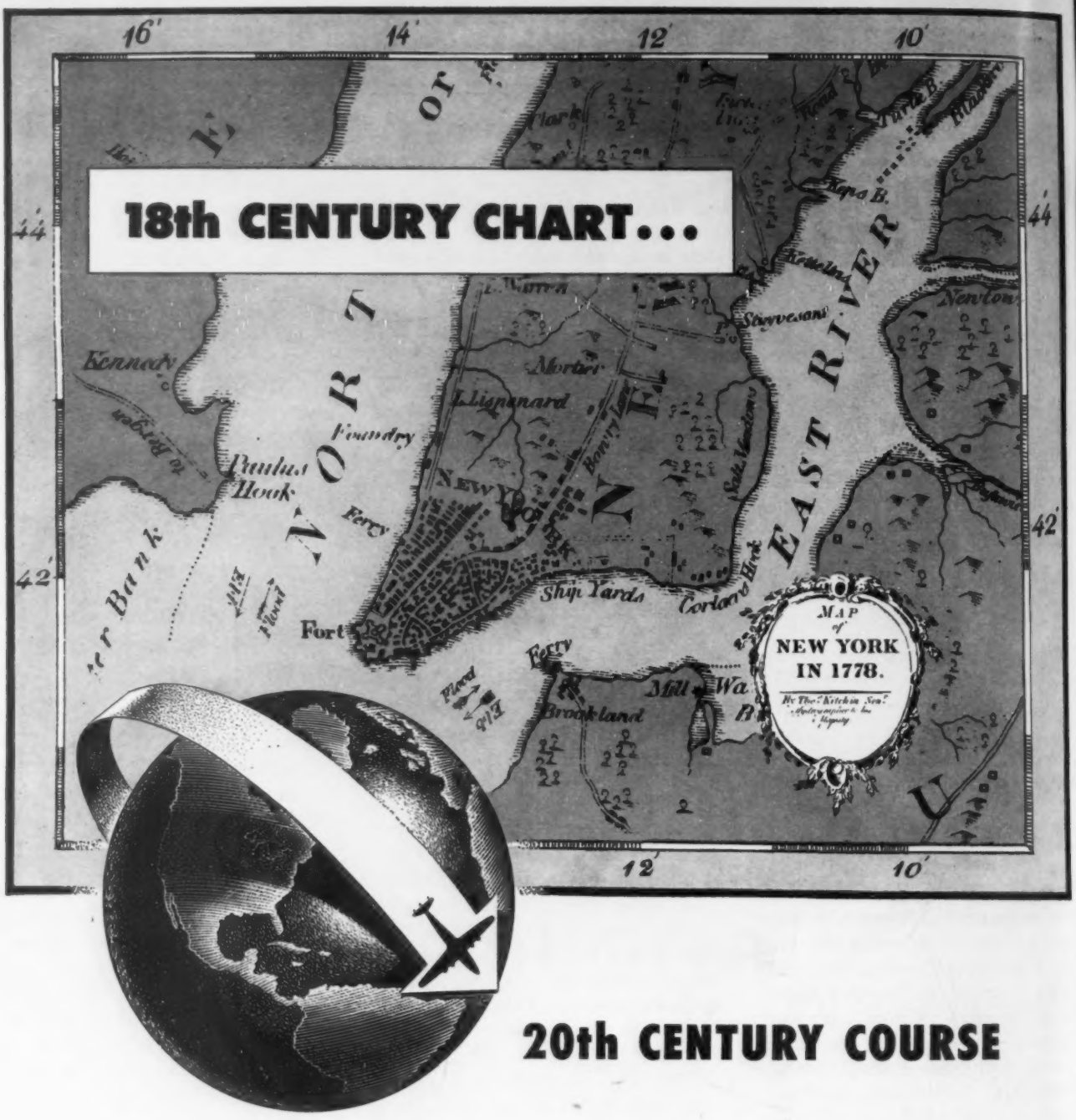
As of June 30, 1953, GSA had acquired 370 tools for storage through this arrangement and paid $2.8 million for them.

How Much They Got . . . From the start of the pool program through June, 1953, GSA assisted 37 builders in financing expanded operations; eight others got help from private sources. GSA advances and guarantees provided $87 million in working capital for machine tool production valued at about $270 million.

Discussion of machine tool sales for defense production ties in with proposed extension of the Renegotiation Act of 1951. The law expired last Dec. 31, might be extended another 2 years by Congress. If it is, machine tool builders hope to be left out this time.

Waste of Time . . . With defense business cut back and civilian prospects "shopping around," machine tool prices are at rock bottom competitive levels, according to a recent bulletin from National Machine Tool Builders' Assn. These low price tags apply to all civilian or defense orders builders might get, and NMTBA claims renegotiation would be a waste of time.

But if machine tools should be included in an extended renegotiation law, builders again want the same partial exemption they formerly got on defense orders from private industry. They'd also like to see the partial exemption applied to the prime contracts they get direct from the government. These were subject to renegotiation of the entire purchase price in the 1951 act.



First in New York to chart and explore the field of local banking, The Bank of New York in 1954 is following a course which meets the multiple banking needs of commerce and industry, both at home and overseas.

The Bank was founded by a group of New York's leading merchants in 1784. Business concerns and individuals continue to find here a quick understanding of their needs. Among our services are specialized Trust and Investment Counsel Departments. All our complete and up-to-date facilities are at your disposal.

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REPORT TO MANAGEMENT . .

Lives down the street

You're not out of a job--maybe one of your neighbors is, but not you. Only problem is you have more neighbors.

Bureau of Labor Statistics last week reported nonfarm employment was down 300,000 for the 4-week period ending mid-February. Factory layoffs of 150,000 accounted for half the drop.

When bad's good

This sounds bad, but if you want it to sound good listen to Labor Secretary Mitchell who sees signs the employment drop is slowing. He reasons:

(1) Factory workweek in mid-February averaged 39.5 hr, about the same as January. This is the first time there hasn't been a factory workweek decline in about 6 months.

(2) Employment in nonmanufacturing and nonfarm industries is at record levels for the season.

(3) New claims for unemployment insurance by the end of the month were declining faster than usual for this time of year.

(4) The 150,000 drop in factory employment is the smallest for any month since last fall.

Later in the week, however, a different set of February unemployment figures issued by Commerce Dept. tarnished the gilt of this generally optimistic view. Most recent estimate placed unemployment at 3.671 million, up 584,000 from January.

Durables are more so

"Flash" report from Dept. of Commerce shows February retail sales edged off from January (although on a seasonally adjusted basis they were up 1 pct.) But it was a good month for durables. Sales were estimated at $4.715 billion compared with $4.492 billion in January. Last February retail durables volume hit $5.304 billion.

Auto strength accounted for most of the January-February increase totaling $2.52 billion in February, compared with $2.372 billion in January. February '53 sales totaled $2.509 billion.

Lipstick and steel

You probably haven't--but don't forget the women. They affect the purchase of goods using at least 60 pct of the steel sheet and strip produced in the U. S.--influence 75 pct of auto sales.

In line with this, if you're coming out with a new product you may be able to get a free TV plug slanted especially for women. NBC's new program "Home" (format like a women's magazine) has a shopping news section during which they show new products--gratis. If you think yours has a chance contact Terry Fox at NBC in New York.

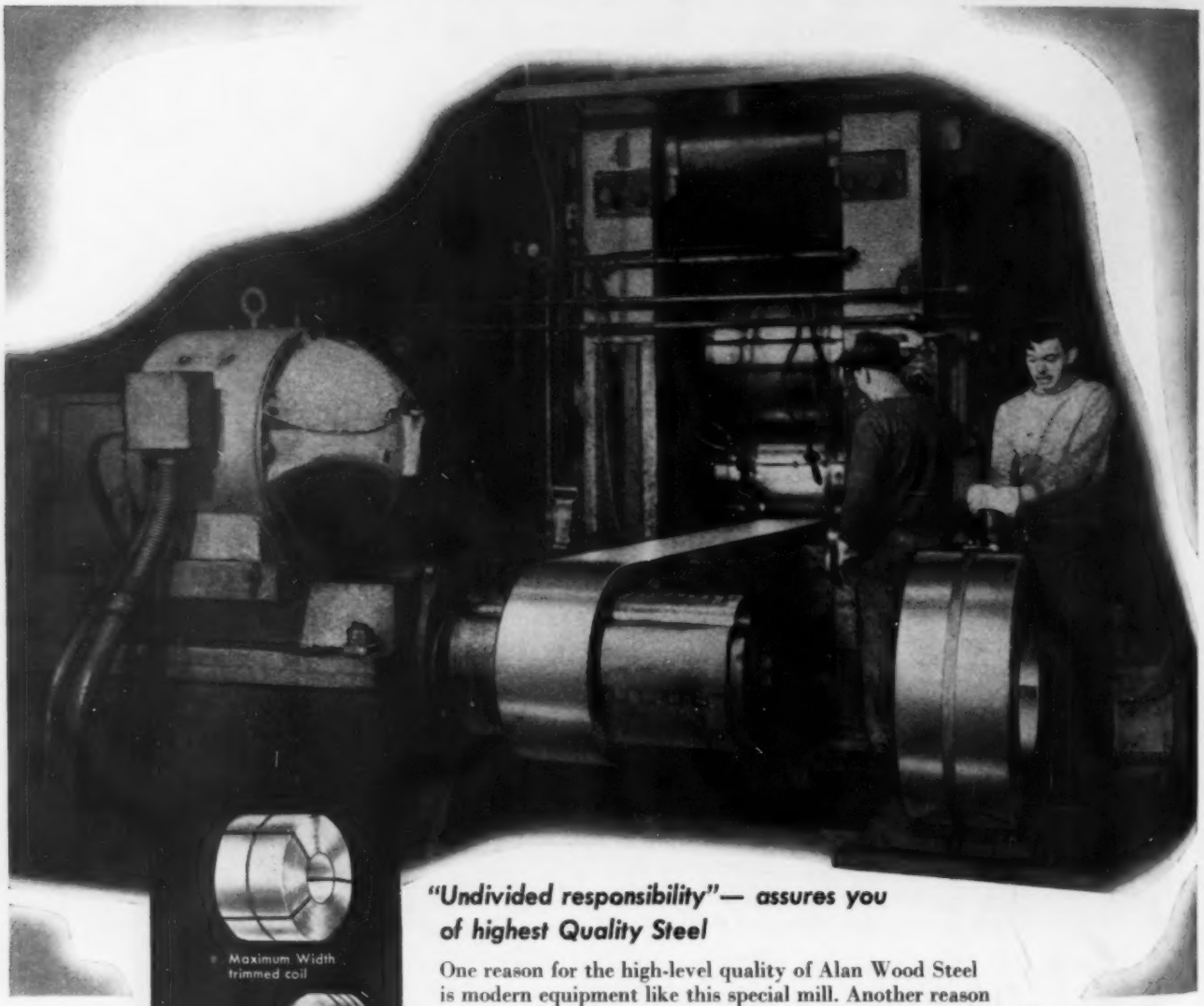
Diamonds friends again

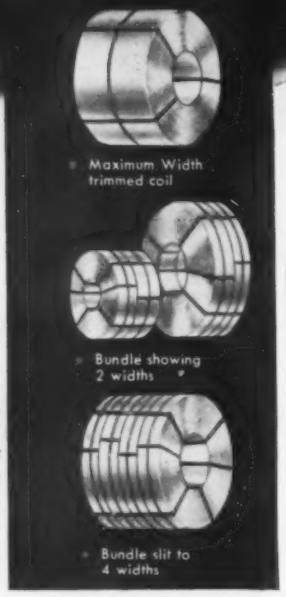
Manufacturers of products with an excise tab will be hurt until the proposed tax cut is put into effect. But smart Macy's has a gimmick--promises a refund (equal to the tax cut) on diamonds sold before the reduction becomes a fact.

Blue-sky thought from C. H. Greenewalt, head of Du Pont: 25 years from now half our working force will be making or selling products that aren't even known right now.

A.W.
CONTINUOUS MILL

PLATE • SHEET • STRIP—*available in hot rolled quality*





More than a century and a quarter of iron and steel making experience

"Undivided responsibility"— assures you of highest Quality Steel

One reason for the high-level quality of Alan Wood Steel is modern equipment like this special mill. Another reason is our policy of undivided mine-to-mill responsibility, and rigid metallurgical control that guarantees your getting the finest quality steel possible to produce . . . and getting *exactly* what you want. Coils are finished with either mill edge or slit edge in widths up to 25½ inches, in thicknesses up to .1875 inches. Coils can also be slit to any desired widths from minimum width 1 inch to maximum width 25½ inches.

Our plant location at the center of Eastern industry and transportation also makes possible faster delivery at favorable freight rates.

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for a complete line of steels

SPECIALS: Jalloy (Abrasion and Impact Resistance) Jalten (High Strength—Good Formability—Lighter Weight) Junior Beams • Junior Channels • Jaltread Floor Plate • Tool Steels • Stainless Steels.

STANDARD PRODUCTS: Hot Rolled and Cold Finished Bars and Shapes. Structural Shapes • Carbon and Hi-Tensile Plates • Hot and Cold Rolled Strip and Sheets • Wire Products • "Precisionbilt" Wire Rope.

for service that solves your problems

TECHNICAL SERVICE: Experienced J&L Metallurgists to help you with analyses and recommendations.

FABRICATION SERVICE: Shearing, forming, torch cutting, blanking, to *your* specifications.

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STEEL CORPORATION — *Warehouse Division*

Where nothing but the BEST will do . . .

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WALLINGFORD

Steel Tubing

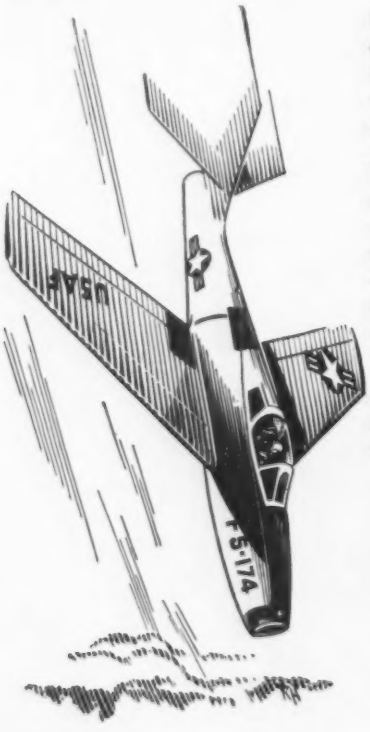
THE REPUBLIC F-84F THUNDERSTREAK

A mainstay in the defense of the free world, this new fighter-bomber exceeds in all performance categories any previous Air Force fighter or fighter-bomber type.

The catapult seat for this hot, new fighter-bomber had to combine light weight with rugged strength to resist shock and protect the pilot. Only the finest construction would do . . . there could be no compromise with dependability or quality. That's why Wallingford Steel Tubing was selected for the frame.

Like the Republic Aviation Corporation, many other satisfied tubing customers learned that there's no source like Wallingford when it comes to meeting the most exacting specifications ***exactly*** and ***consistently.***

Whether your problem concerns strength, analysis, concentricity, diameter or uniform wall thickness, Wallingford has the experience, skill and modern equipment and productive capacity needed to deliver tubing just right for your requirements. Phone us today and let us know what you need.



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Continued

Boiler-burner units

Full description and complete data on the entire line of Kewanee-Ray Boiler-Burner Units that will enable you to select the proper unit for any particular application to high or low pressure heating, power or process steam, are included in 16-p. catalog. *Kewanee-Ross Corp.*

For free copy circle No. 17 on postcard, p. 105.

Stainless steel

Slide rule-like chart which quickly answers the question of exactly what types of stainless steel should be used for about 95 pct of operations requiring the use of stainless is now available. *Crucible Steel Co. of America.*

For free copy circle No. 18 on postcard, p. 105.

Tool grinders

South Bend Lathe catalog describes the recently introduced 8 and 10 in. South Bend Pedestal Tool Grinders as modern machines functionally designed for better and easier off-hand grinding. *South Bend Lathe.*

For free copy circle No. 19 on postcard, p. 105.

Motors

Brochure on explosion proof motors has been released by Allis-Chalmers. Illustrations, dimensions and hp-frame chart are included. *Allis-Chalmers.*

For free copy circle No. 20 on postcard, p. 105.

Nickeloid metals

Fabrication techniques, uses and properties of its pre-finished metals are described and illustrated in new 24-p. booklet. Scores of successful applications are illustrated. *American Nickeloid Co.*

For free copy circle No. 21 on postcard, p. 105.

Electric furnace

New bulletin covering electric heat treat furnaces has just been published by Holcroft and Co. Booklet describes four types of electric heating elements and their methods of mounting. *Holcroft and Co.*

For free copy circle No. 22 on postcard, p. 105.

Machine tools

Three new milling publications are available from Cincinnati Milling Machine Co. They are, heavy duty universal spiral milling attachment, heavy duty vertical milling attachment, and a reprint on broaching automotive castings. *Cincinnati Milling Machine Co.*

For free copy circle No. 23 on postcard, p. 105.

LARGE SIZES AND INTRICATE SHAPES CAN NOW BE FORGED

The press forgings produced by Cameron approach for the first time the broad field of intricate shapes and patterns that have been limited heretofore to steel castings. Thus, the many manufacturing advantages of steel forgings are made more widely available. These advantages include controllable grainflow characteristics and a uniformly high quality, free from internal defects such as porosity and inclusions.

The Cameron forging process opens the door to a great many design features which will aid in producing equipment of greater utility and at a lower cost in manpower and material.

FORGE AND ORDNANCE DIVISION

Cameron

IRON WORKS, INC.
HOUSTON, TEXAS

Scale — one foot

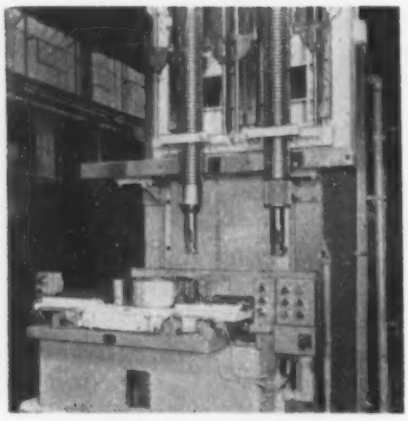
NEW EQUIPMENT

New and improved production ideas, equipment, services and methods described here offer production economies . . . just fill in and mail the postcard on page 105 or 106.

Ultrasonic tool machines the "un-machinable"

Elements required for extreme accuracy, versatility and simplicity of operation are found in the new Cavitron ultrasonic high precision machine tool that has the ability to machine so-called un-machinable materials. It can accurately produce holes as small as 0.012 in. diam or slots of that width, in the hardest materials, at very high speed and low cost. It will sink blind, through, tapered or curved holes of any desired shape and depth; cut keyway and oil holes, etc. The Cavitron uses an inexpensive tool for the precision cutting of hard or brittle materials, ferrous or nonferrous. Operation is accomplished by use of an ultrasonic tool head vibrating from 18,000 to 30,000 cycles per sec while a pump provides a continuous flow of abrasive grit in solution over the work surface. Extremely fine finishes are said to be obtained and there is no local heating or electrical burning of the work. *Sheffield Corp.*

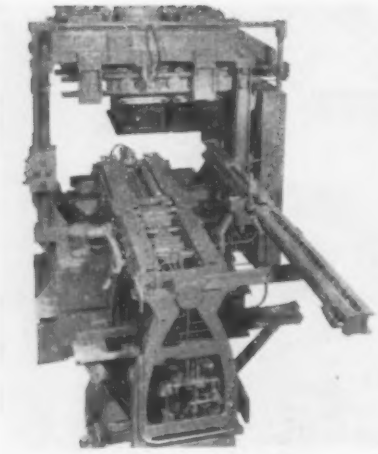
For more data circle No. 24 on postcard, p. 105.



Broach handling eliminated in 2-pass broaching

Increased production and reduced handling are the direct benefits of a broach handling arrangement on a Colonial 50-ton, 72-in. stroke pull-down broaching machine. The set-up enables large components requiring two passes, to be broached internally from start to finish with minimum handling. It can be used for internal broaching of involute splines, straight splines, squares, rectangles and irregular shapes. Improvement in efficiency results from the installation of Colonial's dual sliding broach handling support The part is placed in position on a hydraulically actuated receding table and requires no further handling until completion of automatic cycle. The finished part is then removed and sent along to the next manufacturing operation. *Colonial Broach Co.*

For more data circle No. 25 on postcard, p. 105.

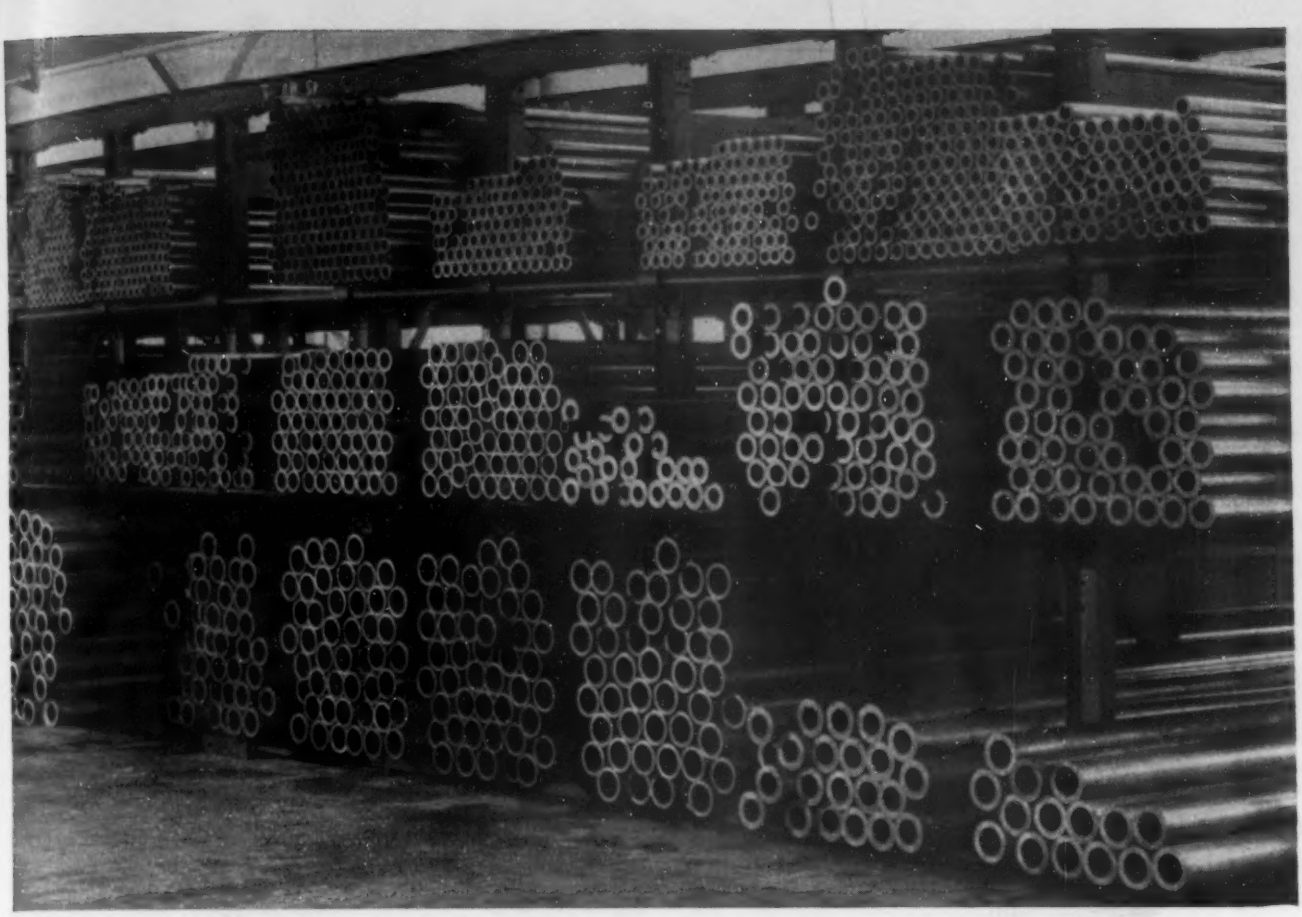


Dual-head core blower provides 400 blows an hour

Unusually versatile operation is claimed for the Sutter dual head Mechanicore. Daily production is easily controlled because three different schedules can be achieved: using both heads for the same core, production can be substantially increased; full production can be maintained on two different size cores—even with two different sand mixtures—simultaneously; it can be used as a single head blower, on either head. Production can be switched from one core to the other (split runs) with no daily shutdowns. There are two refill stations; while one head is blowing the other is filling. Shown with the core blower is the Sutter automatic double rollover core draw machine with pushout device, and the automatic transfer device which moves the cores from the blower to the draw machine. *Sutter Products Co.*

For more data circle No. 26 on postcard, p. 105.

Turn Page



What size 52100 steel tubing do you need? We'll ship tomorrow!

WE carry 101 different sizes of Timken® 52100 steel tubing in warehouse stock—from 1″ O.D. to 10½″. If you order today, we'll ship tomorrow!

52100 is a high-carbon chromium steel that will do most of your hollow parts jobs. In moderate sections it will through-harden and it has been used in place of more expensive steels. You can heat treat it to file hardness and then temper back to any desired point.

Timken 52100 steel is ideal for hollow-parts jobs like these: aircraft parts, ball bearing races, pump parts and plungers, collets, bushings, spindles, grinding machine parts and precision instrument parts.

The Timken Company is America's pioneer producer of 52100 tubing. We have a background of experience in making it that can't be equalled. We've developed rigid quality control procedures that check every step of the operation. Result: uniform high quality from tube to tube, heat to heat.

Write, wire or phone us now for immediate delivery of your less-than-mill-quantity orders of 52100. The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

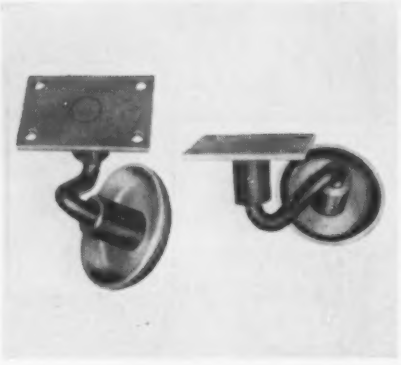
YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING

Quick switch from straight-line to circular work

A dual-head resistance seam welding machine maintains complete setups for either longitudinal or circular seam welding. Mounting two heads at 90°, the unit can be switched from circumferential to straight-line work at the flick of a switch. The welder is said to eliminate approximately two man-hours of downtime normally required to change over a conventional universal machine from one class of work to the other. Available in a size range from 30 kva to 150 kva, either head of the machine operates from a single transformer, but both have individual drives with variable speed control and separate heat controls. Special setups are accommodated by the machine. *Universal Welder Corp.*

For more data circle No. 27 on postcard, p. 105.



Steel caster will not lock or jam

New, non-locking steel caster positively will not lock or jam in any position, even under maximum load, the manufacturer states. The caster requires less effort to start, rolls easier, turns and pivots easier, and takes to bumps and rough surface floors with less vibration and shock than conventional hard wheel casters. Curved axle with dual ball bearing sockets gives instantaneous free movement from any starting position. The caster requires no maintenance, will not pickup or gather dirt or lint, is made of high strength alloy steel with a rust resistant finish. Available in 1½ and 2½-in. wheel diam., welded or screw type bearing plate. *Rolawheel Co.*

For more data circle No. 28 on postcard, p. 105.

Coolant separator removes magnetics

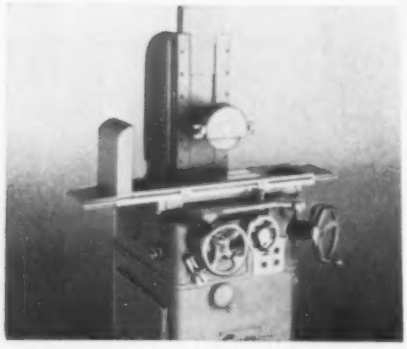
Removing magnetic contaminants from the coolant used with practically all types of metalworking machinery is the function of a new magnetic coolant separator. The separator utilizes Alnico non-electric permanent type magnets to separate magnetics from the coolant. These magnetics adhere to the drum surface of the separator, forming brush-like clusters that sweep out many non-magnetic particles. Clear coolant emerges from either of the side outlets located near the front of the machine. Swart is easily removed. Installation into existing lines is simple. Capacities are 10, 20, 30 and 40 gpm. *Dings Magnetic Separator Co.*

For more data circle No. 29 on postcard, p. 105.

Flow gun applies heavy sealing materials

New precision flow gun provides increased efficiency in flowing sealing compounds such as asphalt, rubber cement and similar heavy materials. It can be used to seal gaskets, moldings, cracks, corners and crevices on auto bodies, refrigerators and other products. No atomizing air is used. The material is forced from a material tank or pumped by one of the many types of material handling pumps. A selection of 16 nozzles with orifices of various sizes and shapes for many types of work is offered. *Binks Mfg. Co.*

For more data circle No. 30 on postcard, p. 105.



Surface grinder for gage and form tool work

This reciprocating table surface grinder is available with hand or mechanical feed. Its longitudinal table travel is 20 in., transverse table travel 7 in. and vertical travel of grinding wheel, 15 in. It will grind work 6x18x15 in. high under a 7-in. grinding wheel driven by any 1 hp motor driven spindle. Table speed is 15 to 50 fpm. A special 1/6 hp 1200 rpm reversing motor drives the table through variable speed pulleys. For very close work such as gage grinding the elevating and transverse movements can be equipped with indicator gages for use with gage blocks or measuring rods. *Covel Mfg. Co.*

For more data circle No. 31 on postcard, p. 105.

Turn Page

Announcing the POWRWORKER "26"

Feature by feature, it's engineered to meet your own handling requirements

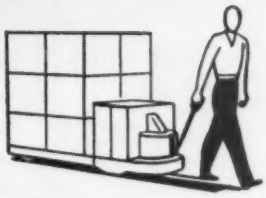
Detailed job-studies in customer plants, warehouses and terminals dictated the features of the POWRWORKER "26". No truck on the market today can match the POWRWORKER'S combination of *user-benefits*:

- **Maximum Maneuverability**—Only 26" longer than the load, the shortest standard truck on the market.
- **Light Weight**—Completely fabricated construction combines maximum strength with least weight.
- **Stability**—Close-to-the-floor, low center of gravity.
- **Great Efficiency**—Double reduction of spur gears gives maximum ton-miles at least power cost.
- **Balanced Load Distribution**—Double lift cylinders for smooth lifting and lowering.
- **Safety**—Deadman switch cuts power when brake is applied, handle automatically returns to brake-position.
- **Easy to Service**—All operating units accessible without lifting or dismantling. Drive wheel tire is quickly demountable.

We invite you to compare the 1954 POWRWORKER with any truck on the market! For details, call your local Clark dealer, listed in the Yellow Pages. Or send the coupon for literature.

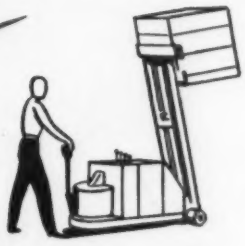
Ask your Clark dealer about Clark's low-cost Pay-As-You-Go leasing plan.

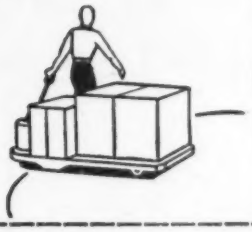
Pallet: 4000, 6000 lbs. cap.



Platform: 4000, 6000 lbs. cap.

Stacker: 1500, 2000, 2500, 3000 lbs. cap.





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PRICED FOR ECONOMY... BUILT FOR RELIABLE SERVICE

Series "D" 'Load Lifter'® Cranes

Never before has so much value been engineered into a crane at the low prices of the Series "D" All-Electric 'Load Lifter' Cranes. They are standardized and mass-produced for average industrial service, yet every type and capacity has design and construction features like those built into all "Shaw-Box" Heavy-Duty Cranes.

The dependable performance of Series "D" 'Load Lifter' Cranes will be remembered long after the price is forgotten. *Three-girder* bridge construction assures rigidity that prevents whipping and skewing. The bridge and trolley wheel axles rotate on anti-friction bearings. Every bearing is a ball or roller bearing. All gearing operates in oil in sealed housings. The motor and drive shaft are permanently aligned. Man, load and crane are completely protected by safety devices.

You can be sure of economical operation, minimum maintenance, and dependable everyday service when you invest in a Series "D" 'Load Lifter' Crane. Capacities range from 1 to 20 tons. Three basic types and three trolley styles available. Floor-operated and cage-controlled models. Selection is easy. Write for Catalog 221, then choose the capacity, type and style to meet your needs.

'Load Lifter'® CRANES

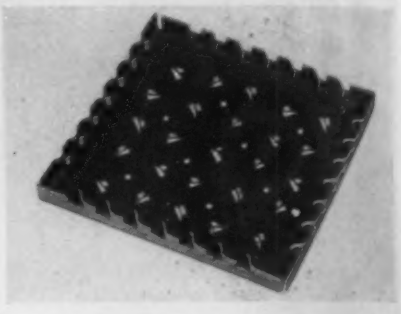
MANNING, MAXWELL & MOORE, INC. Muskegon, Michigan
Builders of "Shaw-Box" and 'Load Lifter' Cranes, 'Budgit' and 'Load Lifter' Hoists and other lifting specialties. Makers of 'Ashcroft' Gauges, 'Hancock' Valves, 'Consolidated' Safety and Relief Valves, 'American' Industrial Instruments, and Aircraft Products.

—New Equipment—

Continued

Steel-clad floors

Heavy-gage rolled steel plates provide a hard abrasion-resistant surface to Ancor steel-clad floors that are said to stand up under the severest kind of industrial usages. Buckling, curling, cracking, and

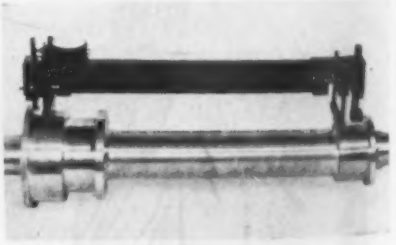


noise are completely eliminated. Each plate, embedded in concrete, is held firmly in place with 25 surface anchors in each square foot and 28 edge anchors to prevent movement in either a vertical or horizontal direction. *Flash-Stone Co.*

For more data circle No. 32 on postcard, p. 105.

Length gage

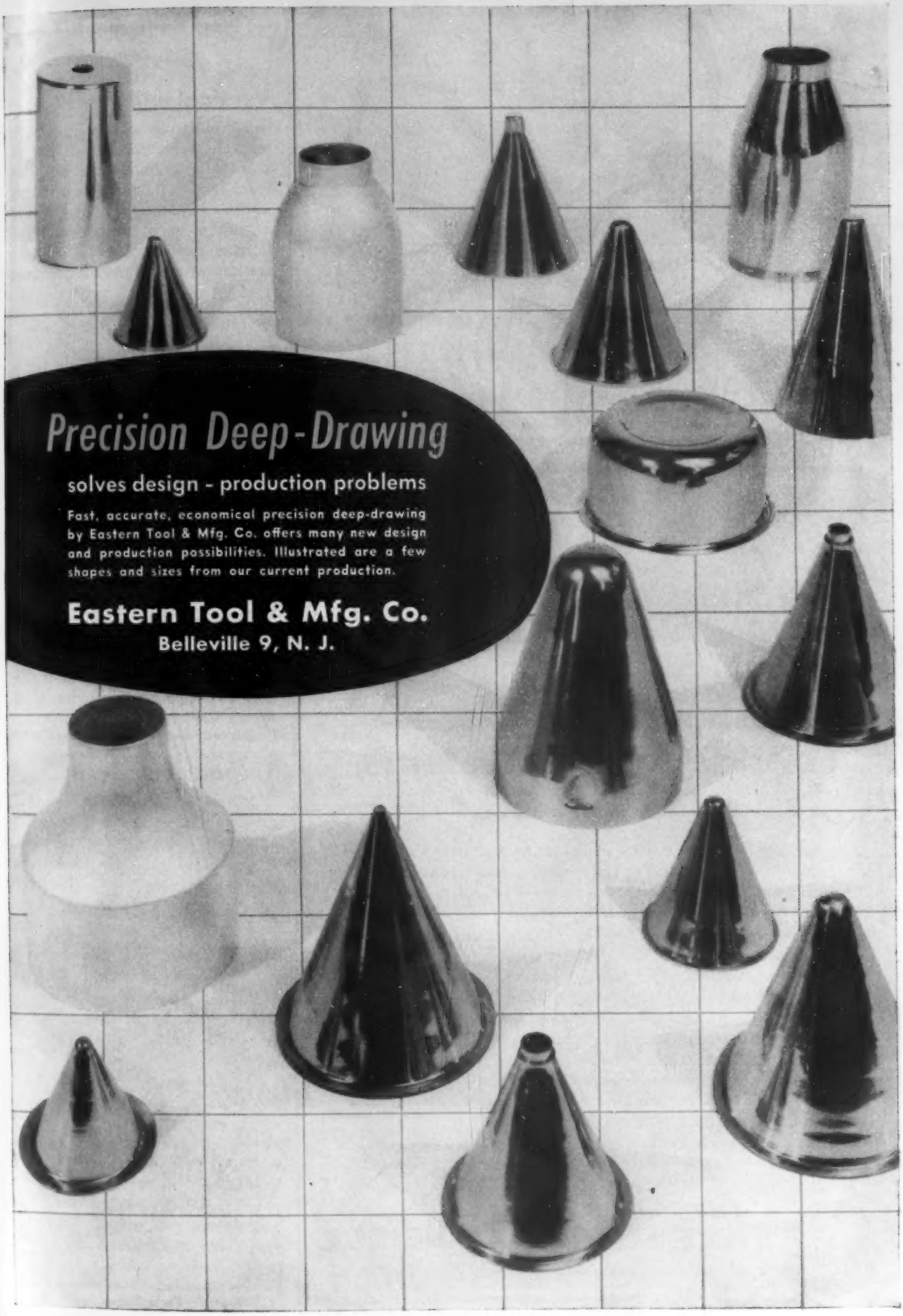
Comparator gage, equipped with a dial indicator, for checking length dimensions on shafts and other assemblies is lightweight yet rigid in construction. It provides a quick and accurate method of comparing the length of a piece part with an established master. Comparison is easily read on the dial indicator.



Radius tipped rests centralize the gage on the workpiece. They permit the gage to be preset on a master that has the same form as the piece part, on a gage block set up to the necessary dimension or on a Boice adjustable set master. Gage is adjustable to provide for product design changes. *Boice Mfg. Co., Inc.*

For more data circle No. 33 on postcard, p. 105.

Turn Page


Precision Deep-Drawing
solves design - production problems
Fast, accurate, economical precision deep-drawing by Eastern Tool & Mfg. Co. offers many new design and production possibilities. Illustrated are a few shapes and sizes from our current production.
Eastern Tool & Mfg. Co.
Belleville 9, N. J.

Consider your secretary's good left arm!

The carriage on her typewriter makes up to 3000 trips a day. And a slam-bang voyage it is. Yet the motion of this carriage must be ever so smooth and exact to give you the clean, smart impressions that are the trademark of a good typewriter.

Tiny rollers under the carriage help to make this precision possible. Inspecting them to assure the close tolerances required had always been an expensive hand operation — until one manufacturer recently asked Taft-Peirce to find a faster, better way.

Taft-Peirce engineers designed a machine that automatically feeds the rollers into an air gage . . . simultaneously measures two diameters, and checks them for out-of-roundness . . . then sorts them into oversize, undersize, or within tolerance groups. Today, this one machine does in an hour what formerly took many man-hours to do. Pays for itself every few weeks.

For a complete picture of the many services Taft-Peirce renders to industry, write for illustrated 92 page booklet, "Take It To Taft-Peirce".

For Engineering, Tooling, Contract Manufacturing

TAKE IT TO TAFT-PEIRCE

The Taft-Peirce Manufacturing Company, Woonsocket, R.I.

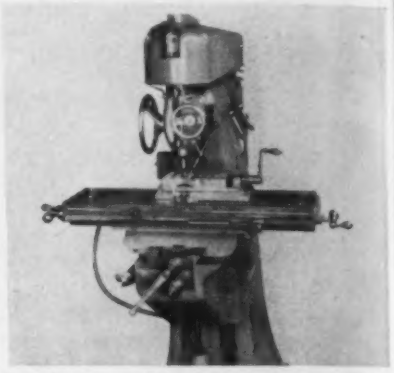
TELEPHONE: WOONSOCKET 1

—New Equipment—

Continued

Vertical mill

An efficient, economical answer to accurate, versatile, vertical and angular milling problems is being offered in the U. S. vertical milling machine. Balanced rigidity, conveniently mounted switch, and tool storage compartment in the base are improvements over its compan-



ion the U. S. No. 1 horizontal miller. The vertical retains the U. S. Burke basic element of simplicity. Vertical table provides an expansive 9½ x 36 in. working surface. Quill travel is 5½ in. Entire head is accurately balanced by mounting the motor behind the supporting column. *U. S. Burke Machine Tool Div.*

For more data circle No. 34 on postcard, p. 185.

Thread compound

High temperature thread compound protects against the welding action of threaded connections subjected to prolonged exposure to extreme heat. Known as Thred-Gard it is

said to eliminate seizing and galling at operating temperatures up to 1200°F. The compound is non-hardening and acts as lubricant to allow easy disassembly of threaded connections, even after lengthy service under the most severe conditions. *Crane Packing Co.*

For more data circle No. 35 on postcard, p. 185.

Turn Page

66% of the 75 largest U.S. manufacturing companies use ELWELL-PARKER trucks!

Here are reasons for this outstanding acceptance...You can benefit by them, too!

LOWER MAINTENANCE because E-P packaged unit design insures instant accessibility for preventive servicing. E-P Service Engineers make periodic calls to advise on maintenance and operation.

15 TO 20 YEARS RELIABLE SERVICE because Elwell-Parkers have more alloy steels and forgings, plus extra-reinforcement of critical parts to prevent excess wear or breakdowns.

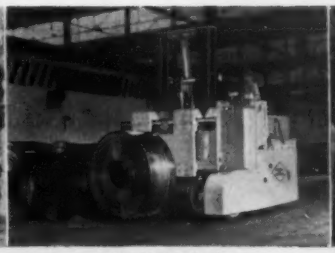
RIGHT TRUCK FOR EACH JOB because Elwell-Parker supplies over 100 models and all types—low lift platform, high lift platform, fork trucks and cranes.

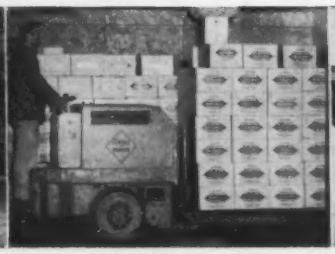
ENGINEERED UNITS FOR SPECIAL APPLICATIONS Elwell-Parker has *unmatched* experience in designing special trucks for unusual load or operating conditions.

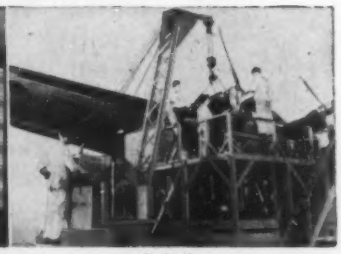
Get the full story by writing for this catalog. The Elwell-Parker Electric Co., 4295 St. Clair Avenue, Cleveland 3, Ohio.

ELWELL-PARKER
POWER INDUSTRIAL TRUCKS
Established 1893

Chemical

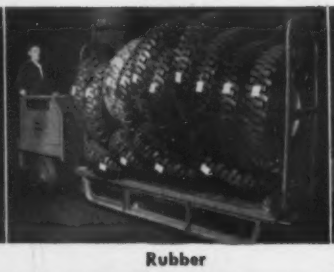

Metal Producing

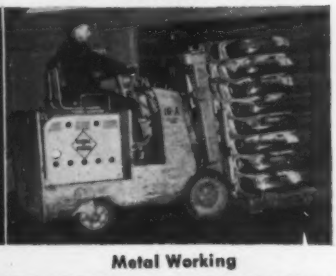

Food


Aviation

Automotive

Paper


Rubber


Metal Working

Refining

Machinery

Electrical Products

Textile

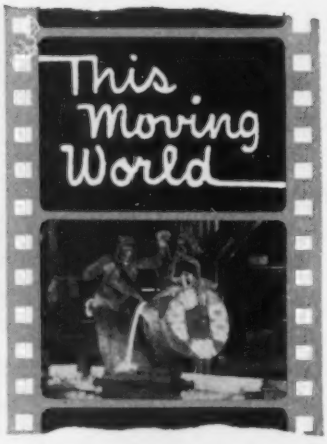
...How about Malleable?

Toughness . . . Ductility . . . Impact Resistance in Easily Machined Castings

Malleable iron is a cast ferrous alloy heat treated to a remarkable combination of toughness, strength, ductility and machinability. It can be cast close to final form and, unlike most cast material, can be further formed by press or coining operations greatly reducing machining cost. Holes often can be punched eliminating expensive drilling operations.

Whether you are designing new products or reviewing current production it will pay you to consider malleable. Call a malleable foundry and have their engineers go over your parts with you. They can give you information and suggestions to help you design better products that can be made at lower cost.

Send for "Malleable Iron Facts" useful information on Malleable properties and uses.



Schedule a showing of the Malleable Founders' Society Technicolor sound film, "This Moving World". The story of Malleable Iron — how it is made, tested and used. Available on request to groups of production men, engineers, students or others.

Ask your malleable castings supplier or write to the Malleable Founders' Society, Union Commerce Building, Cleveland 14, Ohio

Malleable FOUNDERS' SOCIETY

1800 Union Commerce Building Cleveland 14, Ohio

Control panels

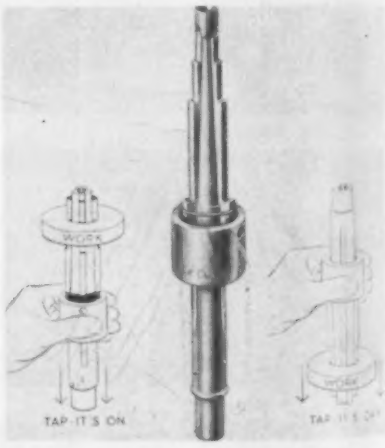
New line of automatic control panels have interlocking door switches so that the electric service must be turned off to permit access to the interior. Relays and other apparatus in the interior are

mounted on removable frames to permit inspection or checking of the equipment outside the panel. Panels feature completely enclosed dust tight construction; can be placed directly against a wall. They comply with J.I.C. specifications. *Ferguson Equipment Co.*

For more data circle No. 36 on postcard, p. 105.

Expanding mandrel

With this Count-Centric expanding mandrel the work is held by three keys sliding in grooves on a 3° taper. The keyfaces are always parallel, and automatically center the work. The longer gripping sur-

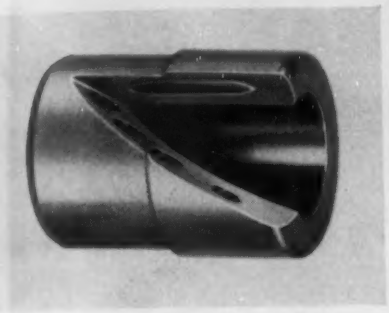


face of the keys prevents marring or distortion in the bore of the work and permits cuts as deep as 1¼ in. in tough steel without chattering. Eleven sizes accommodate every size bore from ⅜ to 7 in. *Le Count Tool Works, Inc.*

For more data circle No. 37 on postcard, p. 105.

Self oiling bushing

New powdered steel alloy bushing is heat treated and has sealed internal oil wells as an integral part of the bushing. The bushings are shipped to user with oil wells completely filled. No external oiling is



required throughout the long life of the bushings. Structure of powdered metal automatically assures proper lubrication to the friction surfaces. Self oiling, less guide pin wear and longer life add up to minimum maintenance, reduced costs, maximum press time. *Allied Products Corp.*

For more data circle No. 38 on postcard, p. 105.

Portable table lift

A portable table lift with a flat steel swivel top can handle heavy jigs and dies weighing up to 2000 lb. Mounted on large ball bearing wheels and raised hydraulically

with a foot pump, the unit also serves as a sheet or strip feeding table, an easily moved portable elevator for loading trucks, storing tools and dies or as a temporary work bench. The table has a lift of 28 to 42 in. *West Bend Equipment Corp.*

For more data circle No. 39 on postcard, p. 105.

Turn to Page 122

When you have a production problem . . . need more capacity or lowered costs . . . you want help in a hurry.

That's exactly the way Weber sub-contract service is geared. Extensive facilities, resources and experience have been combined specifically for sub-contract work in manufacturing, fabricating and assembly.

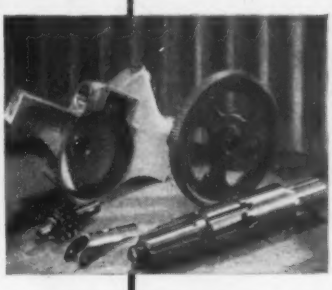
Call on the Sub-Contract Division, Weber Engineered Products, for production help. A specially trained engineer will estimate your requirements, prove advantages in Weber service and get your job rolling fast!

Visit our
Booth No. 518
ASTE Show
April 26-30
Convention Center
Philadelphia

The Weber lists of clients is select, satisfied and impressive. Write for literature showing details of work done for them.

Subcontract Division / **Weber** engineered products, inc.

CLIP COUPON TO LETTERHEAD OR PHONE Cincinnati, WABASH 4343



Subcontract Division, Weber Engineered Products, Inc.
886 Evans St., Cincinnati 4, Ohio

Send ( ) brochure and complete information
Send ( ) production engineer

Name_____ Title_____

Firm_____

Address_____

City_____ Zone_____ State_____

Zincilate X-2

ZINCILATE X-2 *provides galvanic protection.*

Zincilate X-2 is guaranteed to provide more effective, longer-lasting galvanic protection to iron, steel, aluminum, copper or copper-clad steels, when properly applied.

ZINCILATE X-2 *costs 1 cent or less per square foot.*

Material cost for Zincilate X-2 on volume operations is guaranteed to cost 1 cent or less per square foot for a single coat application.

ZINCILATE X-2 *requires no pre-treatment.*

Zincilate X-2 is guaranteed to accept overcoating, or be subjected to welding, immediately after application, and without ANY pre-treatment of the metal.

ZINCILATE X-2 *is corrosion and mar resistant.*

Zincilate X-2 is guaranteed to provide maximum protection against corrosion and marring. Comparative tests against galvanize, zinc and cadmium plating, and multiple-coat painting, prove the superiority of Zincilate X-2.

◇ offers Guaranteed Performance

ZINCILATE X-2 *eliminates degreasing.*

Zincilate X-2 is guaranteed to completely eliminate all time, labor and equipment costs of degreasing operations when applied to steel materials which can be wiped free of foreign matter and which can be subjected to the required baking cycle.

ZINCILATE X-2 *is easily and safely applied.*

Spray, dip or brush applications of Zincilate X-2, using conventional production painting equipment, are guaranteed satisfactory. Application of X-2, and subsequent welding operations, can be accomplished without any safety or health hazards.

ZINCILATE X-2 *is resistant to gasoline.*

Zincilate X-2 is guaranteed not to increase the gum content of gasoline and diesel fuels, eliminating the need for lead-lined tanks.

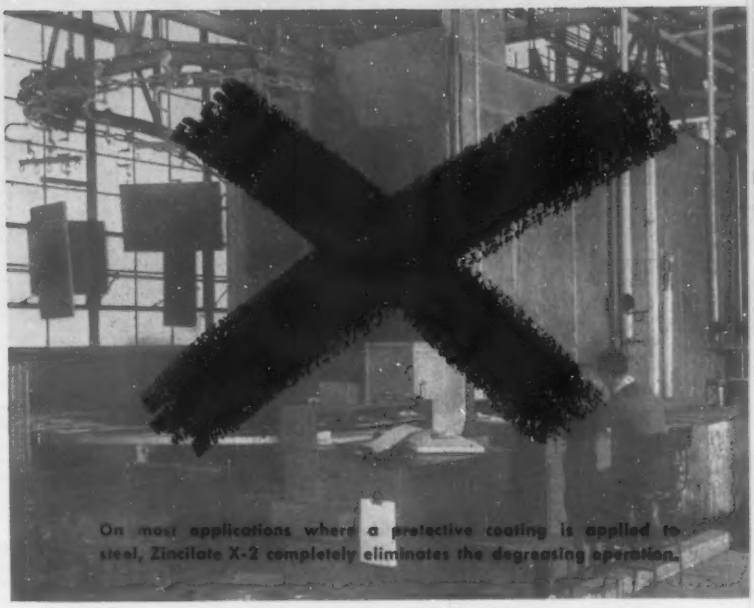
Zincilate **PROTECTIVE COATINGS**

NO. 100: Heat-resistant to 1000° F.
NO. 300-500-501: Air-dry coatings; gray, aluminum, olive drab.
NO. 400-401: Gray, aluminum coatings for water immersion.
NO. 600-610: Gray, aluminum air-dry coatings; pre-mixed.
NO. 601-611: Gray, aluminum rapid-cure coatings; pre-mixed.

the FIRST and ONLY protective coating of its kind

...to eliminate chemical cleaning of steel

Zincilate X-2, an entirely new concept of protective coatings, can be applied without ANY chemical cleaning of steel. Foreign matter is merely wiped off; the normal accumulation of oil and grease that remains will rise to the surface *after* Zincilate X-2 is applied and is baked off while curing the coat. The required baking cycle — 10 minutes @ 400° F. — may be reduced by more thorough cleaning of the steel. Certain products which cannot be subjected to the required baking cycle, or which cannot be conveniently wiped free of foreign matter, will require chemical cleaning.



On most applications where a protective coating is applied to steel, Zincilate X-2 completely eliminates the degreasing operation.

Two minutes after application, Zincilate X-2 is completely non-combustible. Here the operator strikes an arc to begin welding operations on material coated with Zincilate X-2.

PROVED Non-flammable

Extensive and exacting tests *prove* Zincilate X-2 is completely non-combustible within 120 seconds after application. Certified testing laboratories, and nationally-known manufacturers now using Zincilate X-2 on standard production operations, have found Zincilate X-2 more fire-resistant than conventional paint materials, with flash and fire points much higher than enamels.

Working in complete safety, the operator continues to complete the perfect weld between the steel bars. Zincilate X-2 can be subjected to welding immediately after application.

ZINCILATE X-2 is engineered for YOUR product

Zincilate X-2 can be thoroughly investigated and proved, without cost or obligation to you. Write for complete information, outlining your protective coating problem. Please indicate type of material being coated, the end use of your product, and the maximum permissible temperature of your baking facilities, if any. Using this information, we will prepare a detailed analysis of your specific application which will be promptly forwarded for your consideration.

products of

INDUSTRIAL METAL PROTECTIVES, INC.

402 HOMESTEAD AVENUE, DAYTON 8, OHIO

Production More Than Doubled

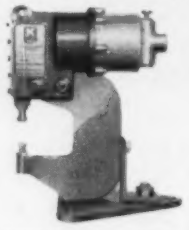
by changing to a

KELLER RIVETER

An electronic tube manufacturer boosted production from 62 to 155 pieces an hour by installing a Keller Compression Riveter in place of a kick press for staking the pins in vacuum tube bases. This 150% increase, achieved at relatively small cost, is typical of the results obtained by proper application of Keller Pneumatic Tools.

For riveting, staking, crimping, pressing, and marking operations, and for forcing fragile parts into a pressure fit, Keller Compression Riveters have the tremendous advantages characteristic of air power. They give a squeeze—not a slap—and exert maximum power only at the *end* of the stroke. This reduces shock and spoilage from cracked and broken parts.

Facts in Brief about KELLER Compression Riveters



- Air pressure gives a squeeze—not a slap
- Can be operated by foot valve or hand throttle
- Automatic cycle, stops at end of each cycle
- Portable, bench, or pedestal mounting
- Ideal for pressing, dimpling, staking, forcing, or riveting operations

Send for descriptive literature and detailed information

KELLER TOOL COMPANY

GRAND HAVEN, MICHIGAN

—New Equipment—

Continued

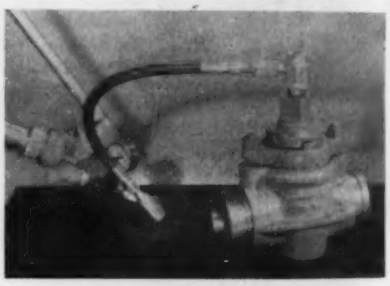
Safe footing

Neofloor is a new, easily applied skid-proof surface coating for concrete, wood and metal floors, in plants, shops and places where oils, greases and chemicals create safety hazards. The material provides safe, comfortable footing and long lasting surfaces which stand up under heavy traffic, heat-aging and other rugged conditions. The product is a grit-like material anchored in a matrix of resilient neoprene and bonded firmly to the floor with an adhesive primer. *Pennsylvania Salt Mfg. Co.*

For more data circle No. 40 on postcard, p. 105.

Button head coupler

New large button head coupler for use with Rockwell high pressure lubricant hand guns and bucket pumps is offered as valve lubrication aid. A positive shut-off device stops all extrusion of lubricant



from the coupler immediately after removal from the fitting, thus solving an important field problem. Known as the 400 button head coupler, the device has ¼-in. pipe thread pull-on and top connections. *Rockwell Mfg. Co.*

For more data circle No. 41 on postcard, p. 105.

Blackening operations

A one-instrument control system automatically maintains the correct temperature and concentration of blackening bath solutions. The instrument, a Foxboro duplex temperature controller with two setting indexes, operates two control valves—one governing the flow of dilution water to the bath and the other regulating the flow of fuel to the burners. Both electric and pneumatic control systems are available. *Foxboro Co.*

For more data circle No. 42 on postcard, p. 105.

The Iron Age

SALUTES

H. B. Spackman

This former salesman organized a "home-built" modernization job; saved millions for his firm.

THE old "never put off 'til tomorrow" adage has no stauncher proponent than H. B. Spackman, president of Lyon Metal Products, Inc., Aurora, Ill.

Back in 1950 Spack anticipated the coming of the overdue buyer's market and initiated a thoroughgoing modernization program that has trimmed an estimated $600,000 per year off the cost of operations in Lyon's Aurora plant alone.

Few executives know better than Spack how teamwork within an organization pays off in improved morale and efficiency. A case in point is the fact that Lyon's $1,250,000 streamlining job was engineered almost completely by the company's own personnel.

Spack's business career started in 1922 when he went directly from the University of Minnesota to Northwestern Expanded Metal Co.

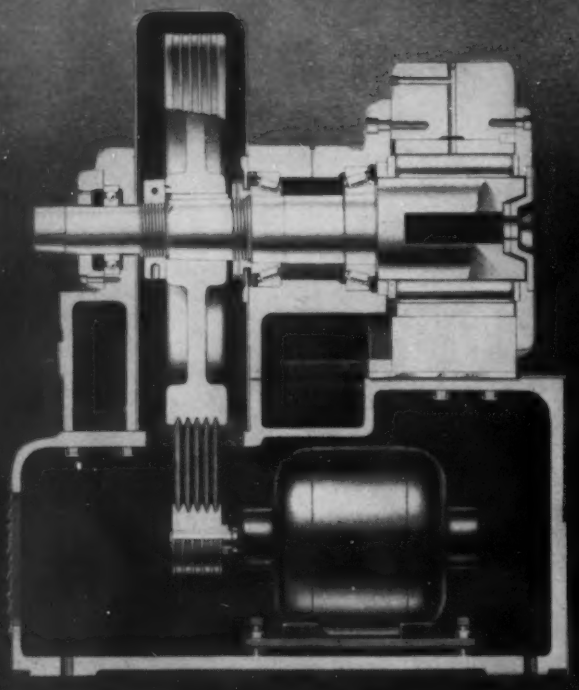
In 1928 he went to U. S. Gypsum Co. with an idea for steel equipment. The people at Gypsum liked the idea so well that they promptly put Spack on their payroll. He got a thorough grounding in administrative methods while there working on consolidation of other companies.

After 9 years with Gypsum, Spack came to Lyon Metal Products via the sales route joining the company in 1937 as general sales manager.

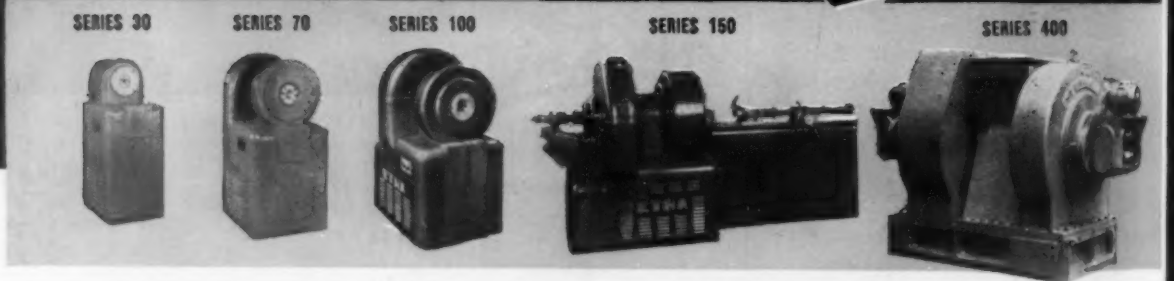
Spack and his wife live in Aurora, where they are currently building a new home. The Spackman's have a son, Richard, now attending the U.S. Naval Academy.

IF IT'S SWAGING... It's Etna..

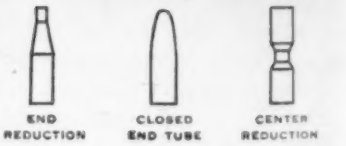
FOR CONTINUOUS PRECISION PRODUCTION!

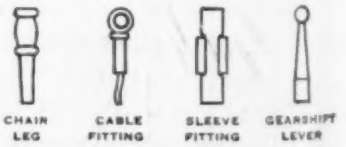


A COMPLETE RANGE OF SIZES AND CAPACITIES



For tapering, sizing, reducing and forming to special shapes of round solids and steel tubing, the Etna Swaging Machine offers the ultimate in modern machine design. Regardless of size and description of the job to be done, there's an Etna swager right for *greater production*. Write today regarding your specific job problems.





It's New! Get full information on the blending into the wall of I. D. Bead on steel and stainless steel tube with Etna Swagers resulting in mirror finish. Bead also removed on conduit.

Abbey ETNA Company

3420 MAPLEWOOD AVE., TOLEDO 10, OHIO

The Iron Age

INTRODUCES

W. A. Fannin, appointed assistant to the vice-president, WEIRTON STEEL CO., Pittsburgh; **C. H. Hesse,** named assistant vice-president in charge of sheet and strip sales; and **R. S. Meighen,** named assistant vice-president in charge of Tin Mill Products Sales.

James J. Munns, elected vice-president, in charge of research and quality control, NATIONAL STEEL CORP., Pittsburgh.

Paul W. Norris, appointed director of sales, DENISON ENGINEERING CO., Columbus, Ohio; **Robert H. Krepps,** promoted to sales manager; and **Robert R. Hyatt,** appointed director of industrial relations.

Harvard K. Hecker, elected vice-president in charge of engineering, CURTIS MFG. CO., St. Louis.

A. S. Kromer, elected a vice-president, CALUMET & HECLA, INC., Chicago.

Edmond I. Eger, elected vice-president-Advertising, ADMIRAL CORP., Chicago.

Kenneth H. Allen, appointed director of purchases, STAUFFER CHEMICAL CO. New York office.

Marion C. Wilson, appointed chief design engineer, Sales Dept., CALUMET STEEL CASTINGS CORP., Hammond, Ind.

John V. Schmitz, appointed product engineer, Chemical Materials Dept., GENERAL ELECTRIC CO., Anaheim, Calif.

Louis E. Wolfson, elected chairman of the board and president, NEWPORT STEEL CORP.

Horrall Harrington, appointed sales engineer, Midwest District, BLAW-KNOX CO., Chemical Plants Div., Pittsburgh.

Rubert Capley, becomes chief engineer, Steel & Tube Div., THE TIMKEN ROLLER BEARING CO., Canton, Ohio, succeeding Walter J. Assel, who has retired.

Harry R. Chase, appointed sales engineer, THE HYDRAULIC PRESS MFG. CO., Mt. Gilead, Ohio; and **Raymond L. Moreland,** becomes sales engineer.

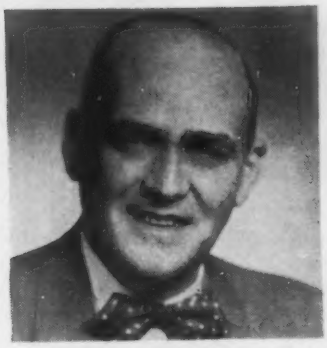
J. M. Hacqua, named field engineer, Commercial Div., LAMSON CORP., New York; and **Albro E. Hall,** becomes field engineer, Buffalo Area.

Arthur Townhill, becomes associate project director, ALLOY ENGINEERING & CASTING CO.

William L. Casey, appointed field sales engineer, RELIANCE ELECTRIC & ENGINEERING CO., Cleveland.

Donald G. Weekes, appointed sales engineer, LONE STAR STEEL CO.

Dr. William Rostoker, promoted to supervisor of physical metallurgy, Armour Research Foundation of ILLINOIS INSTITUTE OF TECHNOLOGY, Chicago; **Dr. Donald J. McPherson,** named supervisor of nonferrous metallurgy, and Verne Pulsifer, appointed head, metallography laboratory.



PRENTICE BORDEN, appointed vice-president and works manager, Lewis-Shepard Products Inc., Watertown, Mass.

FRANK J. COUGHLIN, appointed director of purchases, Niles-Bement-Pond Co., West Hartford, Conn.

H. J. KALBERKAMP, appointed chief engineer, Mesta Machine Co., Pittsburgh.

John Danneker, appointed assistant superintendent, Conditioning Dept., Midland Works, CRUCIBLE STEEL CO. OF AMERICA.

John F. Romans, joins central staff, EATON MFG. CO., Cleveland.

Bernie H. Marks, appointed manager, Houston, District office, PANGBORN CORP., Hagerstown, Md.

Louis Calzi, appointed Development metallurgical staff, SUPERIOR TUBE CO., Norristown, Pa.

Glenn A. Parker, appointed manager, Kansas City branch house, FAIRBANKS, MORSE & CO., succeeding W. W. Guernsey, who retired recently.

A. Barr Comstock, Jr., named general manager of sales, Pittsburgh, PITTSBURGH SCREW & BOLT CORP.; and **Charles M. Sutlive**, appointed manager of sales, Philadelphia District.

Lawrence A. Wilson, named manager of personnel and industrial relations, Cleveland Works, ALUMINUM CO. OF AMERICA.

Guy J. Bates, appointed manager, Fisher Body plant, Cleveland, GENERAL MOTORS CORP.

Warren Dudley, promoted to chief midwest regional field engineer, VIRGINIA METAL PRODUCTS, INC.

Robert A. Bateman, appointed manager of public relations, Kaiser Engineers Div. of HENRY J. KAISER CO.

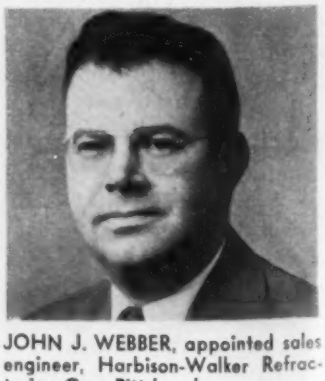
Charles R. Sorber, Jr., appointed Cincinnati district supervisor, Metal Processing Dept., PENNSYLVANIA SALT MFG. CO.

Allan M. Tinker, appointed sales manager, Pennsylvania Lawn Mower Div., AMERICAN CHAIN & CABLE CO., INC.

EUGENE C. CLARKE, JR., vice-president, becomes general manager, Chambersburg Engineering Co.

HADEN J. UPCHURCH, elected vice-president, Texas Eastern Production Corp., Shreveport, La.

EDWARD H. FARMER, appointed plant manager, E. W. Bliss Co., San Jose, Calif. Works.



JOHN J. WEBBER, appointed sales engineer, Harbison-Walker Refractories Co., Pittsburgh.

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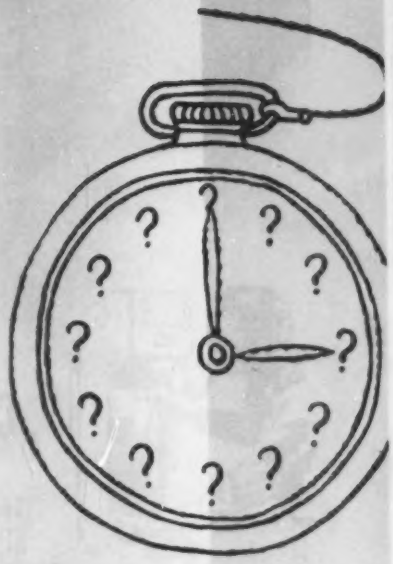

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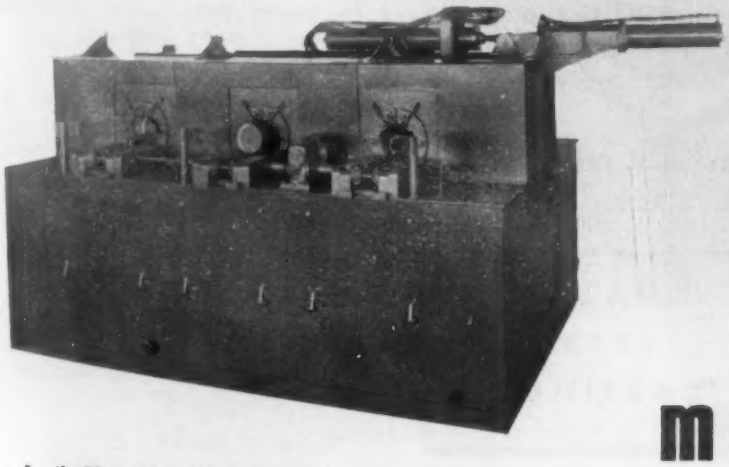
Magnethermic pioneered low-frequency (60-cycle) induction heating. You can obtain complete information by writing, phoning or wiring your inquiry or request to Magnethermic. Prompt reply.



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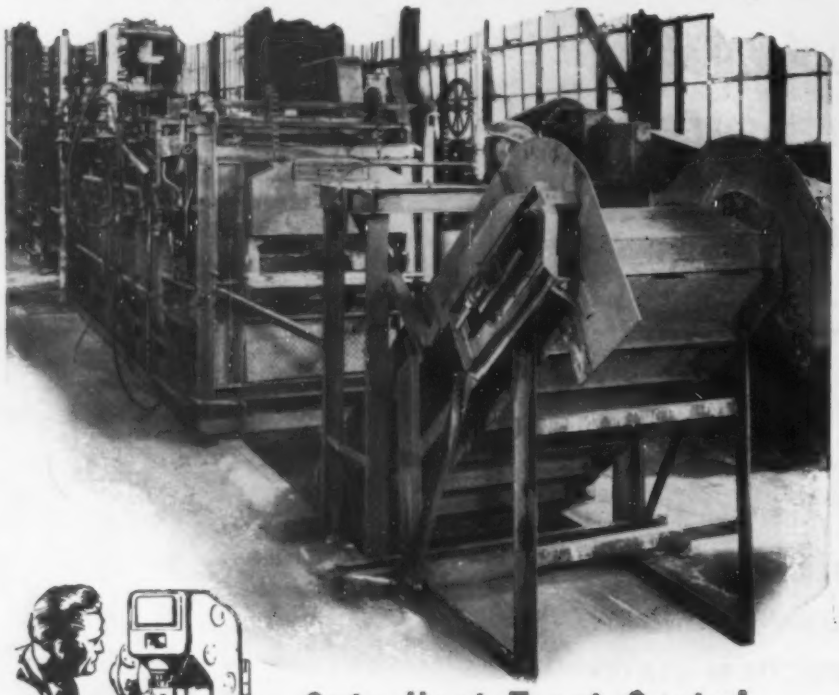

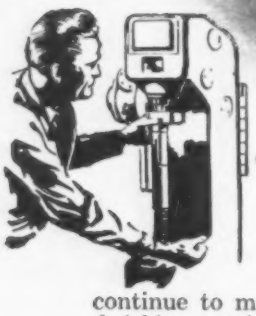

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—Personnel—

Frank W. Miner, Jr., named assistant to the department manager, Industrial Chemicals Div., AMERICAN CYANAMID CO.; **Benedict F. Melucci,** becomes technical director; and **Robert C. Brown,** appointed division purchasing agent.

S. K. Hostetter, Jr., elected general manager, Crocker-Wheeler Div., ELLIOTT CO., Jeanette, Pa.

Paul R. Nichols, promoted to assistant general superintendent, WISCONSIN STEEL WORKS.

Robert Richmond, becomes assistant western sales manager, BLISS & LAUGHLIN, INC., Harvey, Ill.

George A. Reynolds, appointed southeastern regional sales manager, VIRGINIA METAL PRODUCTS, INC., Orange, Va.

Emens Guernsey, named Encapsulating machine sales representative, NORTON CO., Worcester.

Dr. Robert H. Eustis, joins the physics staff, STANFORD RESEARCH INSTITUTE, Stanford, Calif.

W. Gerard McKee, appointed representative in the Schenectady, Syracuse and Rochester areas, Steel Div., HENRY DISSTON & SONS, INC.

W. R. Nolan, appointed district sales representative in Indiana, McLOUTH STEEL CORP.; **John M. Huskey,** becomes sales representative, Chicago district; and **A. E. Hope, Jr.,** named district sales representative for Western Michigan.

Richard L. Whitmer, appointed sales representative, New York branch, REPUBLIC STEEL CORP., Berger Mfg. Div.

OBITUARIES

Clark A. Sutton, 49, manager, Columbia Steel & Shafting Co., Carnegie, Pa. plant, suddenly of a heart attack in Mercy Hospital, Pittsburgh.

Walter C. Pijawka, 47, superintendent, Electric Melting at Midvale Co., Philadelphia suddenly.

DUCTILE IRON: Makes Good On Tough Jobs

By G. S. Farnham
Assistant Manager
Canadian Development and Research
The International Nickel Co. of Canada, Ltd.
Toronto

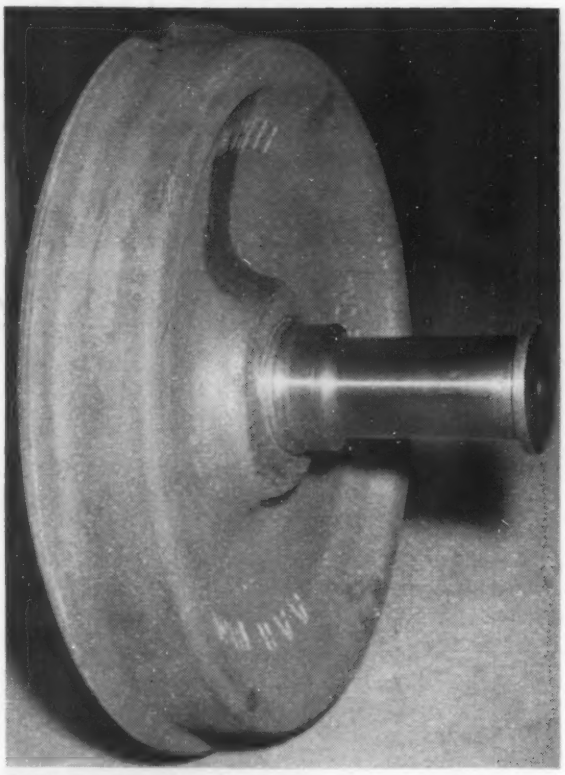
Benton Dixon
Sales Manager & Director
Dominion Wheel & Foundries, Ltd.
Toronto

◆ **Ductile iron's combination of toughness, impact resistance, machinability and good wear qualities have made it a preferred material for many of industry's toughest applications . . . Close control is a must in all foundry operations.**

◆ **Excellent castability of ductile iron simplifies pouring to difficult contours . . . Large cast-to-shape fender dies are being used by one Canadian automaker . . . Success with ductile iron wheels spurs development of standard railway car wheels . . . Small ductile iron dies heat treated and tempered have shown good performance in production.**

◆ DUCTILE IRON has been rapidly accepted as an engineering material and many foundries throughout the world are now producing ductile iron castings. But the material's true value cannot be assessed until castings are designed particularly for ductile iron to take advantage of potential savings in cost and weight.

Indicative of the opportunities for savings through use of ductile iron is the experience of Dominion Wheel & Foundries Ltd., of



Rail car wheel . . .

Close control in the foundry is a must for best physical properties in ductile iron . . . Careful weighing guards quality . . .

Toronto, Canada. More than 700 heats of ductile iron have been poured there since November, 1949, to make heavy industry castings subjected to continued heavy wear and use.

For best physical properties in ductile iron (also called nodular or spheroidal graphite iron) close control is needed in all foundry operations. The amount of contained magnesium, for example, is especially important. More is needed for heavy sections than for light sections. Control of the melt is improved by carefully weighing the iron as well as the additive.

Castability of ductile iron is similar to gray iron and the metal can be poured to close tolerances in intricate designs. Ductile iron castings can be produced with a tensile strength comparable to cast steel and an elongation comparable to malleable iron.

One Canadian automaker is now using cast-to-shape ductile iron fender dies, as cast and heat treated. Ductile iron was specified to obtain greater strength and wear resistance, and to overcome previous difficulty in pouring the 7 to 8 ton casting to the required contour. Cast to shape ductile iron dies are also used by a Canadian aircraft maker to make Inconel combustion tubes for jet engines.

Big problem in producing ductile iron castings is gating and risering. To obtain sound castings feeding must be thoroughly understood. Slag must be carefully watched. Each ladle must be well skimmed, with gates designed to trap slag.

A pearlitic ductile iron such as ASTM No. 80-60-03 has high tensile strength and good impact resistance. It is suitable for high strength and wear applications. This grade can be produced consistently from the cupola with a minimum of 80,000 psi and an average of 95,000 psi.

A ferritic ductile iron, such as ASTM No. 60-45-10 has a minimum 60,000 psi tensile strength and 10 pct elongation. Tensile and yield strengths of annealed ductile iron are higher than for malleable iron. The ferritic type is used in applications requiring ductility, heat resistance and machinability. Good machinability of ductile iron has been an important factor in its use. Annealed ductile iron has much the same properties as cast mild steel but is not as tough. Yield point, however, is higher. Often machinability rather than difference in toughness and yield makes ductile iron preferable.

Cut gear teeth wear well

Machining difficulties and a high rate of rejections at one plant led to use of ductile iron for a 60-in. cut tooth steelmill gear. Hardness ranges from Bhn 225 to 250. Tensile strengths range from 80,000 to 100,000 psi. Excellent wear resistance was experienced on the cut teeth.

In as-cast magnesium-containing iron, tensile strength of 90,000 psi, yield point of 65,000 psi and elongation of 3 pct are sometimes specified. These can readily be met in thinner sections. For thicker sections, strength drops and ductility increases. Properties normally specified for annealed ductile iron are 60,000 psi tensile strength, 45,000 psi yield, and 10 pct elongation.

Thirty-inch heat treated ductile iron wheels capable of bearing 35 tons per wheel were

Ductile Iron: Industry Uses Grow

Auto fender die . . .

Combustion tube die . . .

made for a large ore bridge. The wheels have a hardness of Bhn 350 on tread and a tensile strength of approximately 75,000 psi.

In another wheel application ductile iron was used for wheels of the boring machine of the two big Hydro-Niagara tunnels. Flanges of the chilled tread wheels formerly used broke when uneven rails over rough terrain spread apart causing wheels to drop off the rails. Since ductile iron wheels were installed, there have been no further flange breakage. These wheels were not cast in a chill, but in special cast-to-shape molds and heat treated to give maximum toughness with excellent wear properties. Present development work on standard railway car wheels shows much promise.

Since magnesium reduces sulfur to a low value, little manganese is required to neutralize sulfur. Manganese above that required to combine with sulfur has the carbide stabilizing effect of chromium. When ferritic structures are required, their presence is objectionable. For full ductility, phosphorus should be below 0.1 pct. Nickel strengthens the matrix by stabilizing pearlite without promoting chill. It does not seriously impair annealing operations, and is an excellent carrier of magnesium.

Silicon reduces carbide stability and permits ferritizing of the pearlite. In an all ferrite matrix iron for a ½ in. section, for each additional 1 pct Si, yield point is raised 11,000 psi. This value is 10,000 psi for a 6 in. section. This is important in selecting between ductile and malleable iron, for in addition to the fact that the latter product cannot be made in heavy sections, it cannot be high in silicon if it is to remain white as-cast.

Because of the ferritizing effect of silicon there is a measure of ductility in as-cast high silicon irons, particularly in heavy section. In castings with 3 pct Si or higher, ductility may be quite good even in fairly thin sections.

For annealed ductile iron of usual composition, Charpy value is 10-15 ft-lb in the notched condition and 70 to 75 ft-lb, unnotched. Values, as-cast, are 2 to 5 ft-lb and 15 to 40 ft-lb. These values, lower than for cast steel, are sufficiently high for many applications. High yield point of ductile iron often is the controlling factor in its selection. Its toughness is substantially higher than cast iron.

Copper and nickel, in small amounts, raise hardness and reduce elongation. However, iron will only hold about 1 pct Cu in solution. This value, somewhat higher if nickel is present, is lowered by magnesium additions. The effect of copper in relatively small amounts can be offset by longer time at annealing temperature.

How to heat treat ductile iron

Ductile iron can be satisfactorily heat treated. While some alloy iron castings have been heat treated by flame hardening or induction hardening, small ductile iron dies have been made up by heat treating and tempering. Treatment is similar to handling of an 0.060 pct carbon tool steel die. These heat treated dies have shown good life at considerable savings over other die materials.

Sixty-inch cast ductile iron bevel gears castings, normalized, have proved successful in operation. Previously both cast iron and cast steel with cut teeth had been used in this application. The cast ductile iron tooth gears were made without the cost of machining and have stood up in service.

Both ram and ram pot were made from ductile cast iron in a recently built special application high pressure press. The ram machined to a smooth finish and has given excellent wear. The parts were designed for ductile iron, as cast, with a tensile strength of over

Journal box . . .

Traffic sign yoke . . .

80,000 psi.

For good ductility the quench, usually oil, must be followed by a draw at a fairly high temperature. Fairly good properties can be obtained by hot quenching.

While silicon affects the upper limit of transformation, 1390° F for 0.80 pct silicon iron and 1540° F for 3.2 pct silicon, the lower limit of transformation remains at 1330° F. Best quench temperature is usually just above the upper critical. Beyond this temperature carbon content of the matrix increases leading to possible warping or cracking when transformation takes place. If, the iron is carbidic, castings should be heated to around 1700° F and slowly furnace cooled to just above the upper critical prior to quenching. Heating at higher temperatures may break-down the carbides and impair machinability.

Flame, induction hardening used

If castings to be heat treated are low in ferrite, the iron should be homogenized by soaking at quenching temperature. Tempering leads to graphitization of the martensite. This speeds the softening rate, but influence on properties is not too serious. High silicon irons should be drawn at a lower temperature. At Bhn 290 heat treated ductile iron has been reported to have 140,000 psi tensile, 120,000 psi yield and 4 pct elongation. At Bhn 200, these values are 95,000 psi, 80,000 psi and 8 pct.

Alloyed ductile irons can be heat treated. Apart from graphitization of martensite, alloy addition has the same effect as in steel, and generally increases hardenability.

Preferentially hardened ductile iron has a wide field of application, and can be done by flame or induction hardening, or by chilling. For the first two processes the same considerations apply as for standard quench and draw type heat treating. However, time at temperature is short and best results are not obtained by treating matrices high in ferrite, as in the higher silicon irons.

Fully annealed ductile irons have been flame and induction hardened. In some cases the material to be hardened was chilled prior to annealing. Chilled areas, after annealing, show smaller graphite spheroids than unchilled areas. Refining the graphite promotes solution on heat treating and improves the hardening operation. Maximum hardness obtained in flame and induction hardened surfaces is about Rc 58. At this hardness the background is fully martensitic with a hardness around Rc 65, the overall hardness being reduced by the presence of graphite.

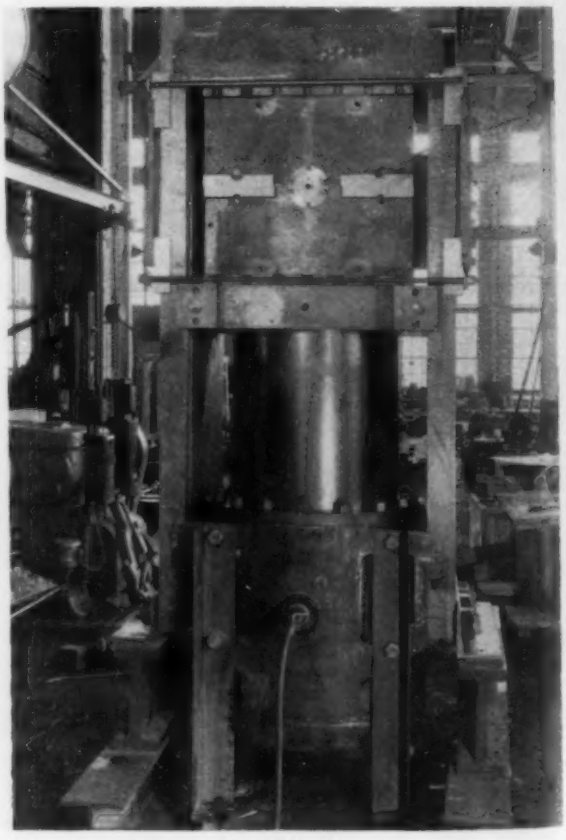
When chilled ductile iron castings lack necessary toughness, satisfactory service is sometimes possible from material chilled then annealed near the lower limit of the critical range. This breaks down fine carbides in the pearlite, yet leaves larger carbides relatively unaffected. The ferrite matrix imparts toughness and the imbedded carbide some wear resistance.

Wear and galling resistance of standard as-cast ductile iron are similar to coarse graphitic gray iron. Because of this, and a higher modulus of elasticity, ductile iron has been used in Europe for piston rings. Resistance to wear and galling makes ductile iron a good gear, die and bearing material.

Improved wear qualities were obtained when ductile iron was specified for packaging machine rolls, These rolls were originally made from an alloy iron. Rolls were used in the as-cast state with a tensile strength of about 95,000 psi.

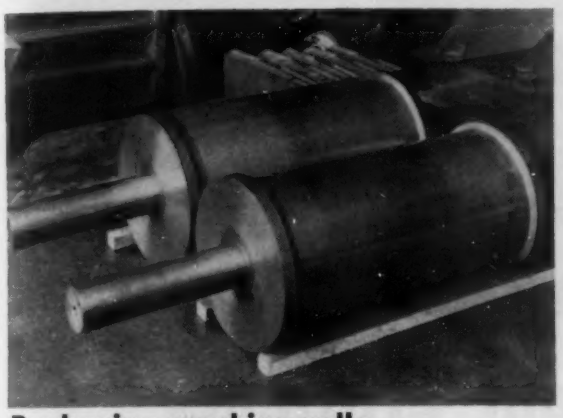
Finer balance and more even wear were possible through specification of ductile iron for printing rolls. Formerly the rolls were cast with integral reinforcing ribs to provide necessary strength. Use of ribs complicated the task of balancing the rolls. Rolls could be cast from ductile iron, without reinforcing ribs, because of the material's greater tensile and yield strengths. Elimination of ribs simplified the balancing operations.

Coated 60 pct Ni, 40 pct Fe alloy makes a suitable welding rod for ductile iron. Heating to 600° F before welding is advisable. For a ⅛ in. diam rod an intermittent bead should be used to distribute heat. Avoid rapid cooling to maintain ductility of the welded materials.

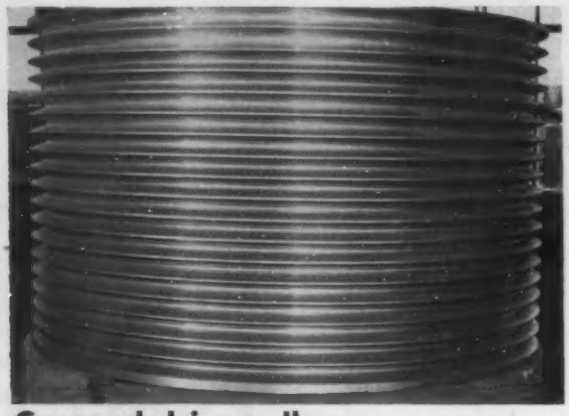


Press ram and cylinder . . .

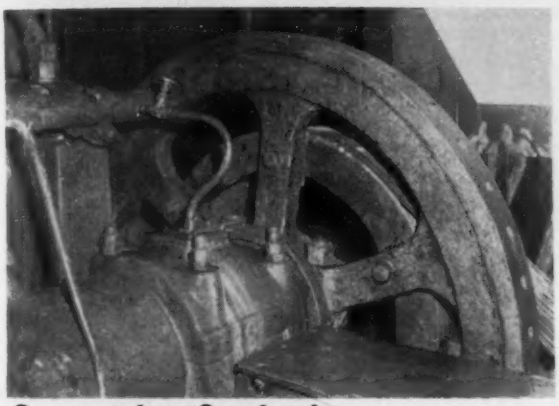
More Ductile Iron Uses



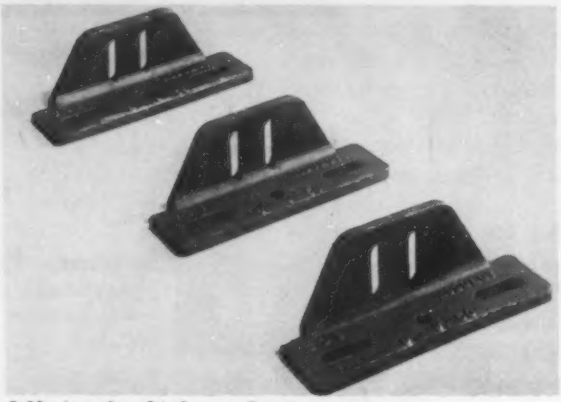
Packaging machine rolls . . .



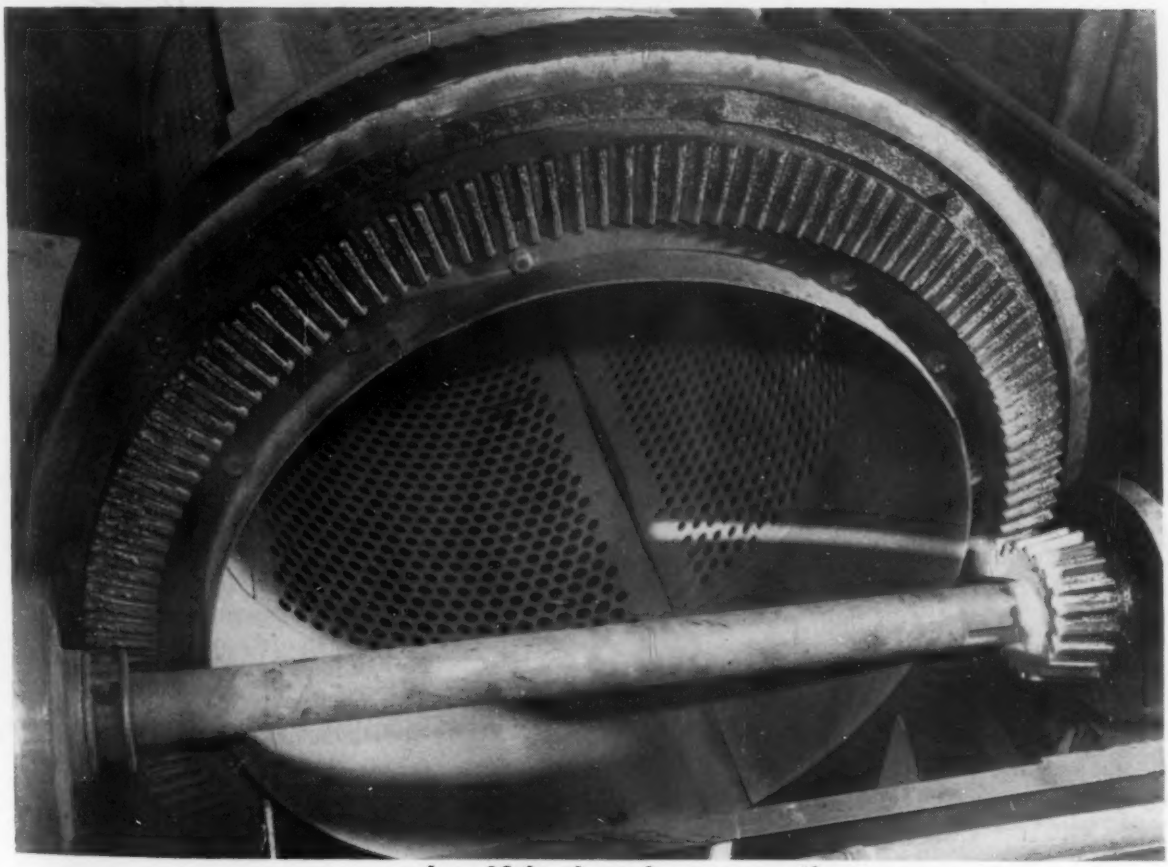
Grooved drive pulley . . .



Ore crusher flywheel . . .



Mine shaft bracket . . .



. . . and a 60-in. bevel gear casting.

In steel mills—

How to Increase Power Plant Efficiency

By Michael Pope
Associate Consultant
Seelye Stevenson Value & Knecht
New York

◆ Electric power consumption per ton of ingot produced has jumped 300 pct in some mills during past 40 years . . . Steam requirements have changed little in that time . . . Trend has thrown power plants out of balance . . . Careful study can show ways to use more by-product fuels and reduce electric power requirements.

◆ Survey of four steel plants shows use of by-product fuels and purchased fuels before and after making recommended power plant changes . . . Impressive savings were revealed and each change was set up to be self-liquidating . . . Biggest savings result from use of modern, high-pressure steam installations.

◆ THE RATIO of electric power used per net ton of ingot produced has increased in some steel plants as much as 300 pct over the past 40 years. At the same time, the quantity of steam required per unit of production has remained substantially unchanged. This ratio depends, of course, on the type and quality of finished products made from the ingots.

Effect of this trend has been to throw these steel mill power plants out of balance. Only a portion of required by-product electric power that can be generated from process steam is actually produced. Boiler pressures that were adequate in the 1920's are found to be too low in the 1950's. Since the additional power required cannot be made as a by-product, it must either be purchased or generated through condensing turbines.

The latter methods usually involve excessive cost and can seriously affect the actual cost of producing a ton of steel. But maximum use of existing equipment and maintenance of an efficient heat balance can often be obtained through installation of a "topping" plant.

With the installation of a "topping" plant, steam is generated at a high pressure of from 900 to 1500 psig, then passed through a turbine-generator and exhausted at 200 to 400 psig into existing steam headers. In this manner, the plant can approach the ideal of 4000 Btu per kw-hr fuel input as compared with the 10,000 Btu ob-

tainable in the most efficient condensing plants.

In a plant which makes a large portion of its electrical requirements as a by-product of process steam, the unit cost of the remainder, generated through condensers, is often less than the price of purchased power. Fuel cost is greater, but there is little or no additional labor required and capital costs per unit of capacity are about the same. In one steel mill studied, that portion of electric power generated through condensers costs about 4 mills per kw-hr more than that made as by-product.

Of still greater advantage, the average integrated steel mill in the United States is able to supply about 60 pct of its total fuel requirements through use of by-product fuels.

It is not possible to achieve an ideal condition where the supply of by-product fuels is sufficient to produce all the process steam requirements and where expansion of the steam generates all the electrical requirements. The supply of by-product gases and coke breeze vary independently of the needs for steam and electric power, and some unbalance is always present. However, this ideal situation can be approached in a well-designed, efficiently operated plant.

Pertinent fuel, steam and electric power data collected during a study of four steel-producing mills are listed in Table 1.

Construction of all four plants was started during the period from 1900 to 1915. However, all but mill No. 4 had had some recent boiler or turbine installation and were operating with mixed boiler pressures.

Big difference in steam and electric power consumption between mills No. 3 and No. 4 has a logical explanation. Both mills are owned by the same company, but mill No. 4 has very little steel finishing equipment. Most of its ingot production is sent to mill No. 3 for processing.

In each of these mills many months were spent in studying, analyzing, and planning a long-range power plant replacement, improvement and modernization program. Programs were designed to be elastic enough to accommodate any changes in production, and each step was set up to be self-liquidating.

Impressive savings were revealed by making most efficient use of present equipment, and replacing over-age equipment wherever necessary. Added savings were pointed out by making the most economical use of by-product fuels, and in use of process steam to make by-product power wherever possible.

A study of predicted future operations is listed in Table 2. It shows the indicated fuel use after making recommended program changes.

Steam pressures for all new equipment were raised, but mills No. 2 and No. 3 had already made sizable postwar installations of low-pressure equipment which reduced considerably the savings they could make on purchased fuels. Mills No. 1 and No. 4 required completely new steam and power plants.

TABLE I

FUEL, STEAM, POWER DATA

From Four Producing Mills

Item	Mill No. 1	Mill No. 2	Mill No. 3	Mill No. 4
Ingot tonnage (Thousands of tons per year)	1,760	1,810	1,535	1,100
By-product fuels used (Pct of total)	59.5	61.0	65.0	56.3
Purchased fuels used (Pct of total)	40.5	39.0	35.0	43.7
Steam generated (Millions of lb per year)	8,000	12,500	12,000	4,000
Power used (Millions of kw-hr per year)	340	285	430	80
Steam per ingot ton (lb)	4,550	6,900	7,820	3,640
Power per ingot ton (kw-hr)	193	158	280	73

TABLE II

PREDICTED USE

By-Product v. Purchased Fuels

	Mill No. 1	Mill No. 2	Mill No. 3	Mill No. 4
By-product fuels (Pct of total)	86.5	68.6	75.3	86.0
Purchased fuels (Pct of total)	13.5	31.4	24.7	14.0

Soldered without acid flux—

Lead-Tin Alloy Coating Improves Workability of Strip Steel

By E. J. Roehl
Manager of Technical Development
Thomas Strip Div.
Pittsburgh Steel Co.
Warren, Ohio

◆ **Strip steel, electrolytically precoated with a lead-tin alloy, offers several important fabricating advantages . . . The alloy, deposited from a recently developed fluoborate solution, contains 85 pct Pb and 15 pct Sn . . . It acts as a lubricant, reducing wear on dies and forming rolls . . . It also eliminates or substantially reduces post-fabrication plating costs.**

◆ **A significant feature of the coating is its excellent solderability . . . Soldering properties remain unchanged even after many months storage . . . Moreover, no chloride or acid flux is required . . . Deposits, being virtually porosity-free, give excellent resistance to corrosion . . . Coating thickness can be controlled accurately to meet specifications.**

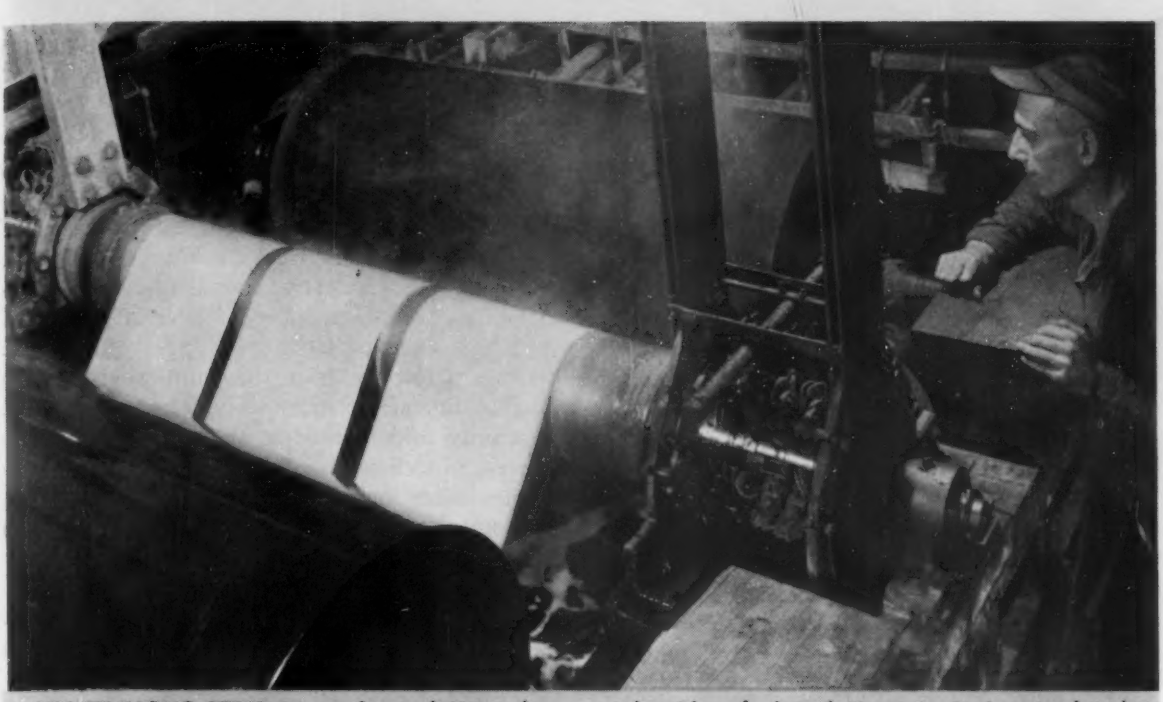
◆ STRIP STEEL, precoated with other metals, offers many fabricating advantages. It frequently works more smoothly than uncoated strip through dies and intricate forming rolls. In other cases, it prolongs die life because the coating acts as a lubricant and reduces wear. Precoated strip also eliminates or reduces plating costs after fabrication and provides a quality finish, both inside and outside, for thousands of manufactured parts for which individual plating would be too costly.

Electrolytic tin plating of continuous steel strip had its commercial beginning in the late 1930's. At present, most tin-coated steel is produced by this process. Continuous steel strip, electrolytically coated with such metals as copper, nickel, brass and zinc, was already on the market at that time and applications for these products have since expanded greatly.

After considerable research and development work, cold-rolled steel strip, coated electrolytically with a deposit of lead-tin alloy, was placed on the market. The electrolytic process provides definite coating thickness to meet customer specifications, a factor which was not sufficiently controllable with the hot-dip practice.

Lead-tin alloy plating has been done with a number of solutions (fluoborate, fluosilicate, alkaline, sulfamate), but at present these alloy deposits are prepared almost exclusively from fluoborate solutions. After a preliminary laboratory survey of the various solutions, test coils with deposits containing 13 to 15 pct tin were produced on a pilot line from the accepted fluoborate solution. These immediately met customer rejection because of unsatisfactory solderability.

Poor solderability was related to the plating solution composition, although it was possible that the relatively low tin content of the deposit and the comparatively light coating thickness might be factors. A new plating solution was eventually developed, deposits from which proved that the plating solution composition was the controlling factor.



CONTINUOUS STRIP passes from plating solution over a contact roll through which the cathode side of the plating circuit is completed. Deposited lead-tin alloy is relatively pore-free.

TAKEUP REELS at exit end of plating line pull strip steel through plating, rinsing and drying operations. Coating thickness is accurately controlled to meet specifications.

Its soft and ductile nature, and its effectiveness as a lubricant suggest the usefulness of this coating for drawing operations . . .

Further study showed that deposit composition and deposit thickness are not the only factors influencing solderability. Other factors are equally or more important and must be carefully controlled. This is in addition to the careful control of the metallurgical properties of the steel base.

The new process produces a deposit which is substantially free of any undesirable film or roughness. The coating has excellent solderability when its tin content is maintained at the proper level.

Proof of its soldering characteristics is indicated by the considerable tonnages of the coated product that have been used for many months in continuous automatic soldering line equipment. Western Electric Co., Kearny, N. J., uses this lead-tin alloy plated steel strip for making Stalpeth telephone cable. The strip is corrugated, formed into a cylindrical sheathing, and positioned for continuous soldering.

Operating conditions of the new solution have been correlated with deposit composition. Anodes of the same composition as the deposit are used, and cathode current density is held at about 60 amp per sq ft. Under the conditions used, anode and cathode efficiencies are very close to 100 pct.

Ability of the new process to produce relatively porosity-free deposits is another advantage. Its freedom from porosity is superior to that of hot-dipped terne coatings. In metallic electrodeposits, porosity is to some extent dependent on the plating solution composition.

Salt-spray tests show that steel panels plated by the new process have better resistance to corrosion than those plated in a customary fluoborate solution. In both cases, the coating was a 15-pct lead-tin alloy, and solutions were prepared under identical conditions except for composition. The conventional fluoborate solution also contained 0.5 g per liter of glue.

Electroplated coatings of pure tin oxidize within a few weeks to the point where soldering is difficult or impossible. The new product not only solders readily at the time it is produced, but shows no change in soldering properties after many months of storage.

Coatings, such as hot-dipped solder, pure tin and cadmium are used for soldering operations. These require a flux containing chloride or acid for satisfactory soldering performance. The new lead-tin alloy coating has the advantage of being readily soldered without the use of an acid flux, and with minimum consumption of solder.

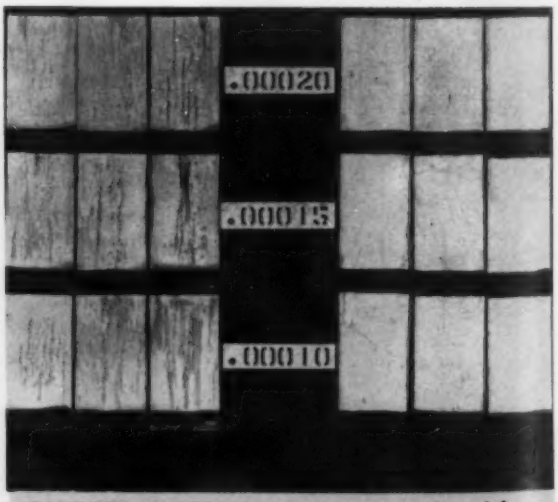
Excellent base for paint

This electrolytic coating is also an excellent base for paints and synthetic enamels. No priming coat is necessary. Salt-spray tests on scribed samples show that when lacquered, this coating is superior to lacquer over zinc-plated and phosphated steel.

Another advantage is the close control of coating thickness inherent in electroplating as compared to that of the hot-dipping process.

Careful control over production processes gives excellent bonding of the coating to the steel. Its soft and ductile nature, and its effectiveness as a lubricant, suggest the usefulness of this coating for drawing operations.

CORRUGATED SHEATHING for telephone cable passes through continuous soldering operation at Western Electric's Kearny Works. Solder forms excellent bond to the coating.



SALT-SPRAY TEST shows coating produced from new solution (right) to be superior to that from a conventional fluoborate solution, (left). New coating forms strong bond to steel base.

Push button control—

Scrap Handling Speeded With Automatic Shear-Baler

By W. G. Patton
Asst. Technical Editor

◆ A new German-built baler for bundling steel scrap, in operation at Pontiac Div., General Motors Corp., shears and bales bulky scrap quickly, uniformly and efficiently . . . Small bales weighing 60 lb are ideal for cupola charging . . . A single press makes 3 bales in 2 min.

◆ Two baling presses, controlled by a single operator, will handle approximately 86 tons of stamping scrap every 16 hours . . . Simplified maintenance and unusual accessibility are obtained by installing the equipment at the operating floor level.

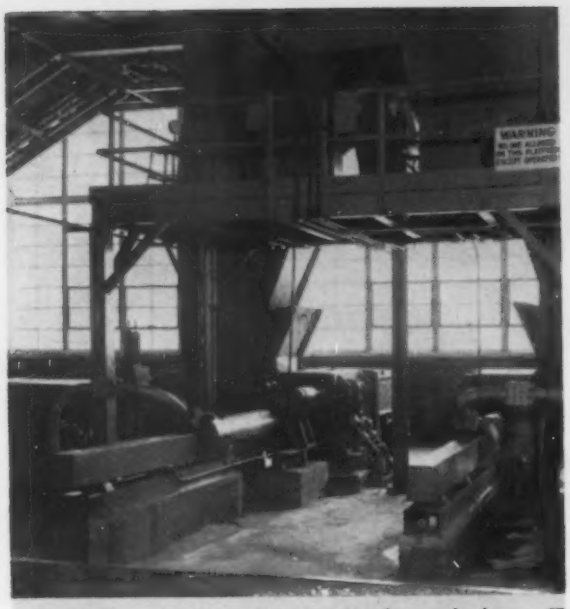
◆ AUTOMATION has been introduced into the scrap baling department of the new stamping plant at Pontiac Div. of General Motors Corp. The new Pontiac, Mich., stamping plant, now nearing completion, is operating in limited production but full production is anticipated soon.

At Pontiac, the familiar scrap baler attendant with a rake, trying frantically to discipline a twisted and unruly piece of scrap steel, has discarded his rake for a set of pushbuttons. Standing on a platform above twin Lindemann shear-baler units, he merely presses a button to start the sequence of operations. The cycle goes forward automatically to completion. With the new baler, the operator's only responsibility is to see that he presses the proper control button.

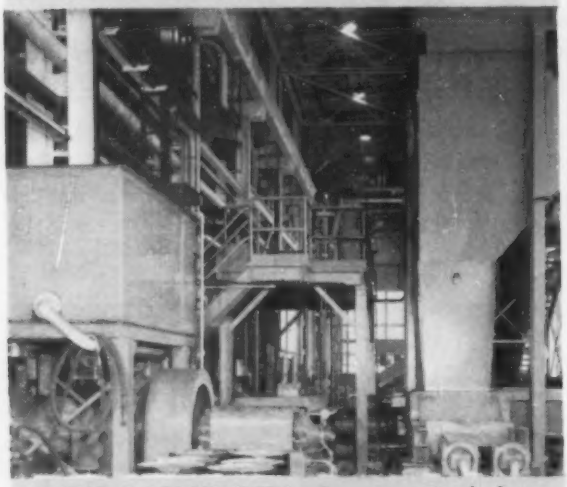
If a piece of scrap feeding continuously from the conveyor should become jammed, the operator descends a few steps to the operating floor. Equipment covers can be readily removed by loosening a few nuts and bolts. If a ram should stick, it is easily accessible and readily freed.

Combining the function of scrap shear and a scrap baling press, the new equipment installed at Pontiac shears the scrap, compresses it into small, dense bales and ejects 11 in. x 11 in. x 6 in. bundles onto a chute that empties into a moving belt conveyor.

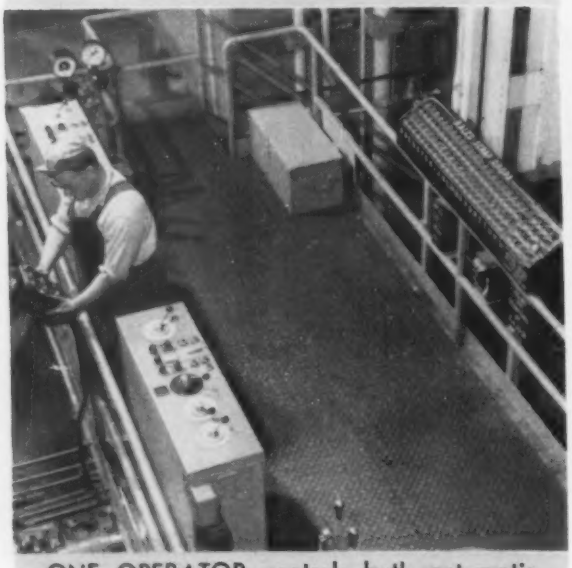
STEEL SCRAP is moved up conveyor to automatic shear-balers above.



BALER, rear view, shows control panel above twin baler units, scrap conveyor at upper left.



EASY ACCESSIBILITY of automatic baler-shear components is important feature.



ONE OPERATOR controls both automatic shear-baler units from this elevated platform.

Advantages of the automatic shear-baler may be summarized as follows:

1. Oxygen cutting and manual raking of scrap is eliminated.
2. Scrap is handled continuously and automatically.
3. Number of valves and rams is reduced.
4. Opening of the press box can be varied to suit the application.
5. Bales are ejected automatically by the high pressure ram.
6. Cylinders are horizontal and easily accessible at floor level.
7. Output per sq ft of floor space is increased.
8. Operating rate for the smaller bales ranges up to 100 bales per hr; for the largest, 45 bales per hr.

Other favorable characteristics of the new equipment at Pontiac include minimum ram travel and elimination of vibration and chatter. The entire equipment is ruggedly built. Hydraulic lines have been reinforced to minimize or eliminate chatter and vibration.

The new Pontiac shear-baler works like this: Scrap is fed continuously into a 37 x 26 x 6 ft box holder by a conveyor belt. Speed of the 4½-ft wide conveyor belt is approximately 30 fpm.

A ram moves forward automatically to exert the initial pressure on the scrap below the cover plate. Pieces of scrap above the cover plate are cut off as the ram blades close. Scrap below the shear is forced into the final compression chamber.

Bale size can be varied

Pressures of 2000 to 3500 psi can be used in forming the bales. Normally, a pressure of 2000 psi is applied to the final ram operating against a counter ram.

Bales are ejected automatically, falling by gravity on a compartmented conveyor which carries the bales back to the operating floor and, thence to a waiting freight car. Eventually, positioning of the scrap cars will be controlled by the baler operator with the assistance of television.

Size of bales may be varied at will, Automatic scrap baling equipment of this type is available for making bales ranging from 60 to 950 lb. Small bales were selected by Pontiac to facilitate weighing and charging in the cupola. Due to the small size of the bale and the high pressures exerted, density of the smaller bales is greater and more uniform than if larger bales were made.

Operating experience to date indicates that all types of curved and beaded scrap are readily handled. Baling 100 pct flat scrap presents a more difficult problem. Experience with this material has been limited up to the present time.

The new Pontiac baler was designed and built in Germany. U. S. standard threads were used wherever possible by the German manufacturer, Maschinenfabrik Lindemann, Pressenbaugh, G. M. B. H., Dusseldorf, Germany.

ELECTROMAGNET dumps bales into hopper for transfer to the cupola charging floor.

TELEVISION will soon allow baler operator to position freight cars for loading baled scrap.

Shear knives used are a heavy, square design, permitting 4 rotations before resharpening.

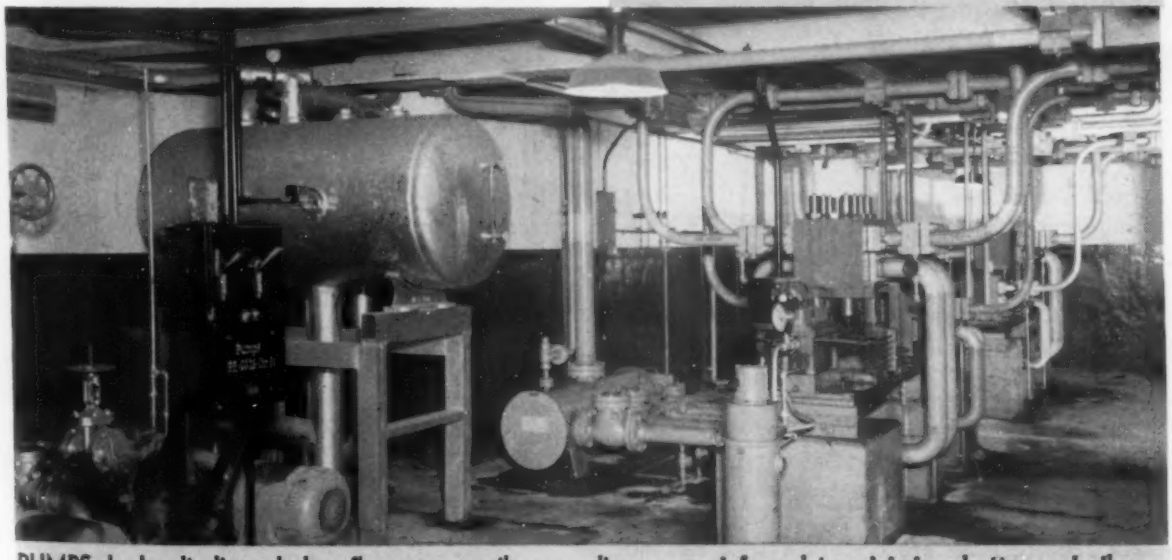
Body steel scrap, mostly 20 gage, is the principal item being baled at Pontiac. However, the equipment is rugged enough to handle fairly heavy plate, according to Pontiac engineers.

The press box at Pontiac is designed to handle up to 11 in. x 11 in. x 11 in. bales. Bales regularly produced are 11 in. x 11 in. x 6 in.

A 100 hp GE electric motor is the main power source for the Pontiac shear-baler. The electric motor drives a Lindemann-built unit which furnishes hydraulic power for the rams and other requirements. Accumulators are not required. Push button controls are located above the operating floor, permitting an unobstructed view by the operator of both the press box and the ejection chute, or conveyor.

The Pontiac installation is the first of its kind in this country although it is reported that other automakers have ordered similar units.

PRESSED, 60 lb bales are conveyed to car-loading platform by compartment conveyor.



PUMPS, hydraulic lines, below floor, are easily accessible, help insure continuous operation. Hydraulic lines are reinforced to minimize chatter and vibration during operation of the equipment.

Under repeated stress—

Endurance Limit of Zirconium

By W. P. Wallace
Senior Engineer

R. H. Wallace
Research Assistant

Livermore Research Laboratory
California Research & Development Co.
Livermore, Calif.

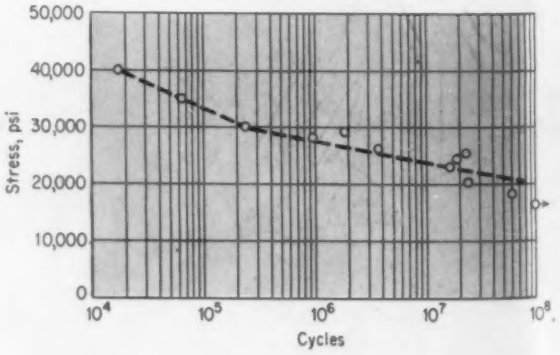
◆ Many properties of zirconium and its alloys have been thoroughly investigated but little is known of their fatigue properties . . . To gain more information so that parts made of these alloys may have longer service life and serve more efficiently, the Livermore Research Laboratory tested specimens of crystal bar zirconium under repeated stress at room temperature . . . Results show that zirconium does not have a clearly defined endurance limit.

◆ MATERIALS FOR MACHINE PARTS and structures are being examined more critically to gain greater speed, more efficiency and longer service life. Designers no longer can base calculations on ultimate or yield strengths since many applications involve vibrations which induce alternating stresses. The parts must withstand static and dynamic loads. For mobile equipment, desired strength must be achieved with a minimum of material for a maximum pay load.

Aircraft materials, and to some extent materials for trucks, buses and trains, are examined for strength as well as for saving weight. When these requirements are combined with dynamic load conditions, practically all mechanical properties become important.

In springs, shafts, gear teeth and turbine blades, stress fluctuations of thousands and millions of cycles occur during the service life of the parts. Present knowledge of fatigue can only serve as a guide to the behavior of materials under dynamic loads. However, because it is the best guide, fatigue tests are used by engineers to study the endurance of materials.

In the field of atomic energy, the properties of zirconium and its alloys have been of considerable interest to metallurgists. Although many properties have been investigated thoroughly, little was known of their fatigue properties. To gain these data, the Livermore Research Laboratory of the U.S.A.E.C., operated by the California Research & Development Co., tested ½-in.



REPEATED-STRESS TESTS show variations at lower stress values. This indicates that zirconium has no clearly defined endurance limit.

Spreads Over Wide Range

diam crystal bar zirconium by subjecting specimens to repeated stress at room temperature.

CHEMICAL ANALYSIS OF SPECIMENS

Element	Pct	Element	Pct
Zr	Major	Mn	0.001*
Si	0.005	Mg	0.001*
Fe	0.02	Pb	0.001*
Al	0.005	Mo	0.001*
Hf	0.004	Ni	0.005
Cu	0.0007	Cr	0.003
Ti	0.002	Sn	0.001*
Ca	0.005		*Less than

Tensile properties were determined on two samples, the results of which were:

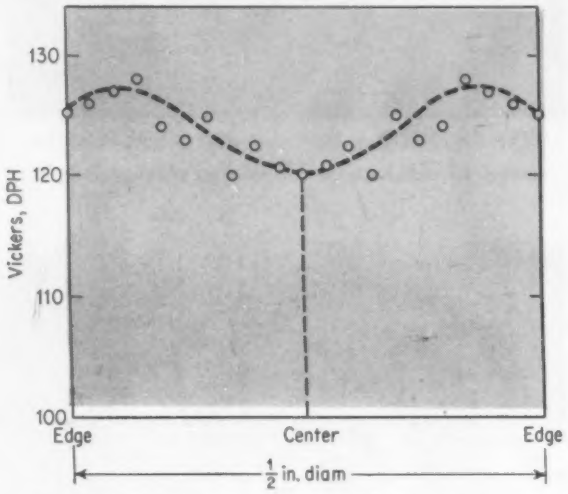
Property	Sample 1	Sample 2
Tensile strength, psi	52,700	51,000
Yield strength, psi	32,500	31,000
Elongation in 1 in., pct	18.0	15.0
Reduction of area, pct	37.9	42.5
Modulus of elasticity, psi	$\sim 14 \times 10^6$	$\sim 12 \times 10^6$

Except for yield strength which appears to be on the high side, these results conform to the values anticipated.

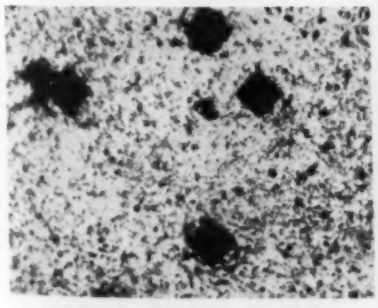
Cross-sectional hardness traverses show a small variation in hardness from edge to center of the ½-in. bar. Although the actual fabrication history of the bar is not known, somewhat greater hardness at the surface of the bar indicates that it has received some cold working. The microstructure shows that the grains are about 0.010 mm.

Fatigue tests were performed in a Krouse repeated-stress machine, using a cantilever beam load applied to the specimens rotating at 8000 rpm. The ⅜-in. diam specimens were 3 in. long, with a 1-in. section in the center reduced to 0.300 in. The reduction was formed by a 3.35-in. radius. After machining, specimens were polished longitudinally to a finish of about 4 microinches.

Results of the repeated-stress tests show some variation at the lower values of stress. With one exception, samples loaded to 26,500 psi or less broke in the shoulder at the supported end of the cantilever beam. A specimen which was loaded to 16,000 psi did not break at 101 x 10^6 cycles. These results show that crystal bar zirconium does not have a clearly defined endurance limit.

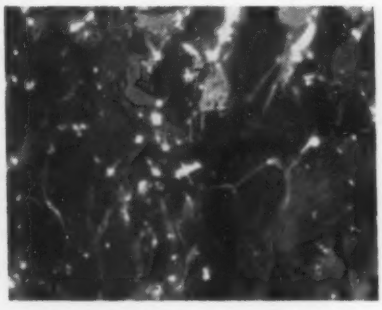


HARDNESS traverses across ½-in. zirconium bar section show variation from center to edge. Greater hardness at the surface of the bar indicates cold working during fabrication.



MICROGRAPH of crystal bar zirconium at 100X shows grain structure of specimen. Squares are diamond-point hardness impressions.

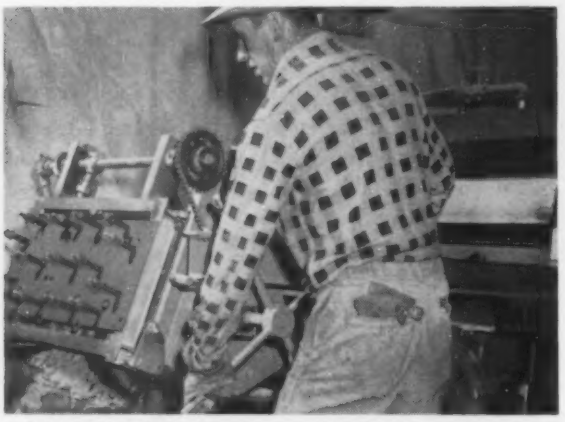
TRANSVERSE SECTION of zirconium specimen at 500X clearly defines grain boundaries. The grains are approximately 0.010 mm.



ILLUMINATION by polarized light on this transverse section is an aid to the metallographer in studying structure. Magnification is 500X.

Fewer rejects—

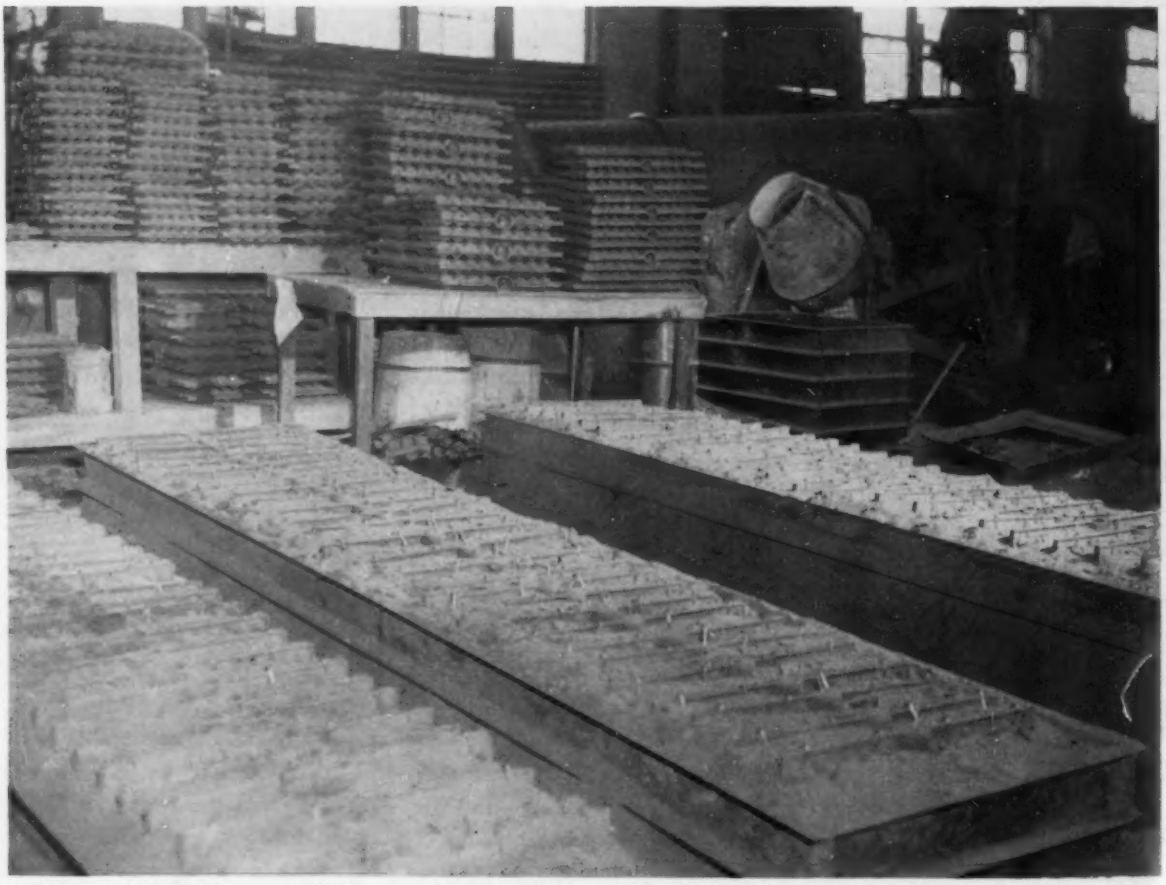
Small Foundry Switches to SHELL MOLDING



HOT PATTERN is set over dump box, then inverted to receive coating of the sand-resin mix.

◆ FEWER REJECTS and better utilization of foundry space have resulted from use of shell molding to produce steel grinding balls at Wasatch Ball Foundry, Inc., Salt Lake City, Utah. Up to 200 tons of grinding balls from 1 to 5 in. in diam are produced per month. The installation is one of the first shell molding production setups in the Intermountain West.

Wasatch Ball Foundry produces a high carbon steel grinding ball used in mine and mill equipment. Steel for the Hy-Steel ball is melted in a cupola using a high grade carbon coke obtained from Alabama. Melting temperature is about 3100°F. To obtain a more solid ball, steel is poured without cooling. Ninety per cent of metal poured winds up as grinding



MOLDS ARE SET on sand floor within metal frame. Sand provides backing between the shell molds.

♦ High carbon steel grinding balls for mine and mill machinery are being produced from shell molds at a Salt Lake City foundry . . . In making the switch from sand to shell molds, Wasatch Ball Foundry cut its reject rate, made better use of foundry space, improved production.

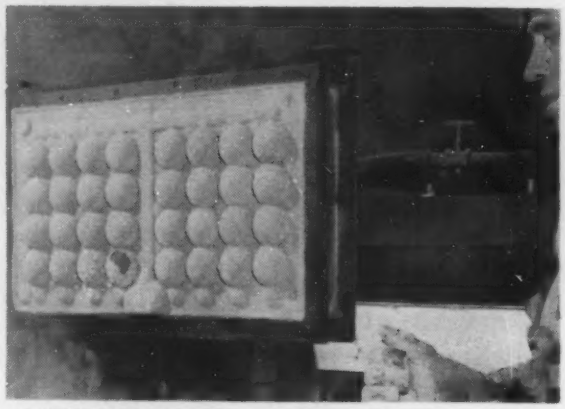
♦ For pouring, shells are clipped together, set directly on the foundry floor within a metal frame, and backed up with sahd . . . Scrap for the foundry operation comes from local auto wreckers . . . Production of the 1 to 5 in. steel balls adds up to about 200 tons per month.

By J. C. Jensen
President
Wasatch Ball Foundry, Inc.
Salt Lake City

balls, with the balance accounted for by runner-gate returns.

Automotive steel scrap is purchased from local wrecking yards. The foundry has a capacity of more than 200 tons of steel castings per month. Until recently, the plant used sand molds, screening new sand from nearby silica sand pits. After studying the possibilities of shell molding, Wasatch Ball Foundry purchased a new Tyco shell molding machine.

Experience to date indicates castings are superior to those made in sand molds. Two to 10 pct of phenolic resin is added to a high grade silica sand free of all clays and foreign matter. Aluminum patterns are used to make



MOVEABLE OVEN, rear, is used to bake shells. Broken spot in mold will be patched with resins.

MOLDS ARE QUICKLY clamped together, stocked until needed on pouring floor of the foundry.

Shell molding has assured supplies of dry molds . . . Castings are held to closer tolerances and rejects have been cut . . .

the ball shell molds. The sand-resin mixture is applied to patterns gas heated to between 400° and 500°F. Gas is used for this heating because it provides a constant even heat. The gas heating unit stays with the pattern plate throughout the operation to hold the plate at even temperature.

Sliding oven cures shell

A release agent composed of waxes diluted with kerosene or light fuel oil is sprayed on the pattern with a paint gun after molding each two or three shells.

When the pattern is ready to invest it is rotated over the top of a dump box containing the sand-resin mix. The dump box and pattern are then inverted by use of a pen stock. Heat from the pattern binds the sand-resin mix into a tight skin. Dump box and pattern are returned to their original positions. The movable oven is drawn over the inverted pattern and held there until the shell is cured. The oven is moved out of way and the product, a 3/16 to ¼ in. sand-resin shell, is removed from the pattern.

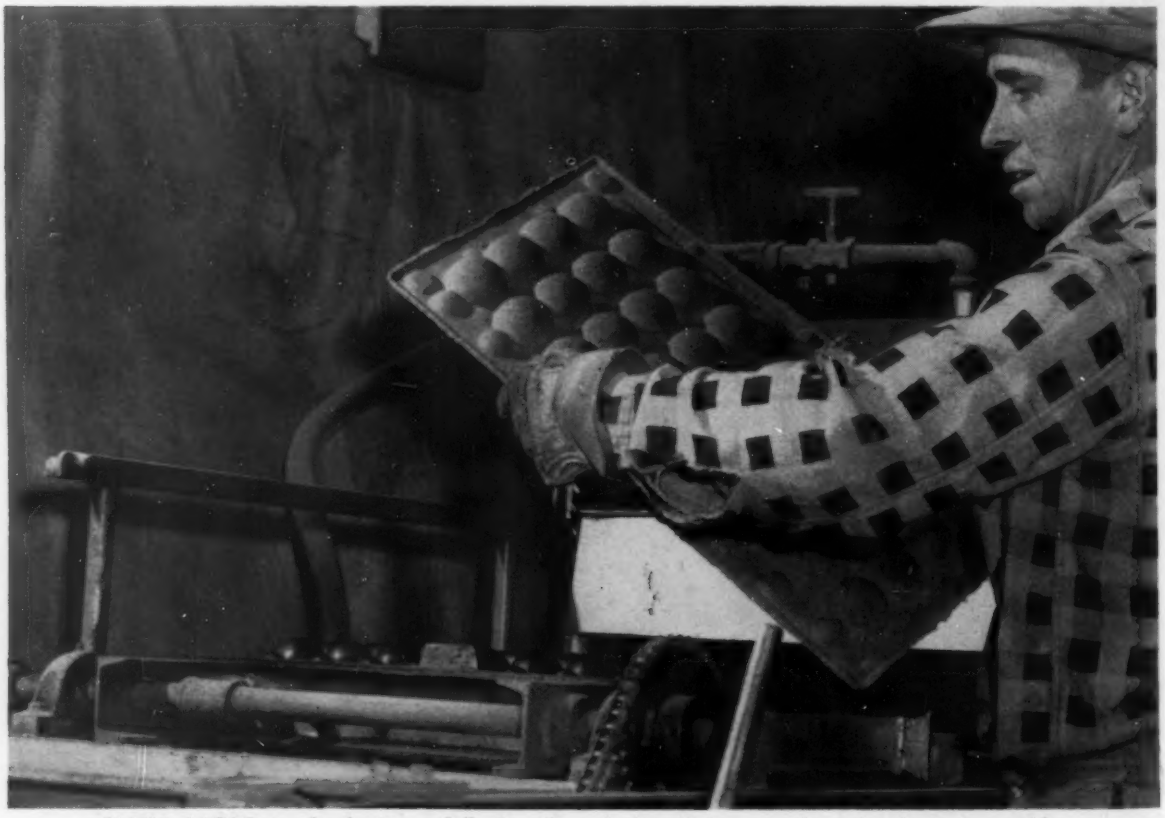
The movable oven, generating 1100°F, cures the shell in from 12 to 30 seconds. Curing time is determined by the melting and adherence of resin particles on the sand. Shell molds can be produced at two stations on opposite ends of the machine.

Shell molding has assured availability of dry molds for casting. Rejects are cut and safety improved through elimination of kick-backs and blowups during pouring. Castings can be held to closer tolerances. Smaller runners and gates can be used and little or no machining is required on the castings.

Molds are set directly into the sand floor within a rectangular metal inclosure. Sand is used for backing. This permits pouring of a greater number of shells at one time than would be possible with sand molds. Sand is used for backup. This open bottom procedure, pouring in shells set directly on the sand floor, has worked well at this foundry.

Meets mining industry need

Use of shell molding to produce grinding balls marks another step forward in development of this Western foundry. The plant, established as a general foundry in 1935, has concentrated on production of a specialized product to meet needs of the mining industry.



SHELL MOLD is checked carefully for flaws before it is passed to the fastening table.

TYPICAL EXAMPLES OF FAWICK APPLICATIONS ON MODERN PROCESSING MACHINES

STAMCO Coil Box, coil opener, and feeding unit equipped with FAWICK Type CB Airflex Clutch with ventilating adapter.

FAWICK...
CONTRIBUTOR TO PRODUCTIVITY

Fawick Type CB Airflex Clutch

Here is another clutch installation that demonstrates why there is an ever-increasing demand for FAWICK Airflex Clutches.

It is used on a machine produced by STAMCO, Inc. called a Coil Box, coil opener, and feeding unit.

Operation of this unusual machine requires exceptionally high clutch performance. The rolls operate in either direction, with "inching" speeds ranging from 50 to 150 feet per minute. The clutch must also operate at free-wheeling speeds up to 500 feet per minute.

FAWICK's simple design and sturdy construction provide operating accuracy, complete inching control, low maintenance, and long, adjustment-free service life.

If your problem involves industrial clutches, FAWICK engineers will be glad to show you the many advantages FAWICK units will provide for your specific machines. Simply call or write the Main Office, Cleveland, Ohio.

FAWICK AIRFLEX DIVISION
FEDERAL FAWICK CORPORATION
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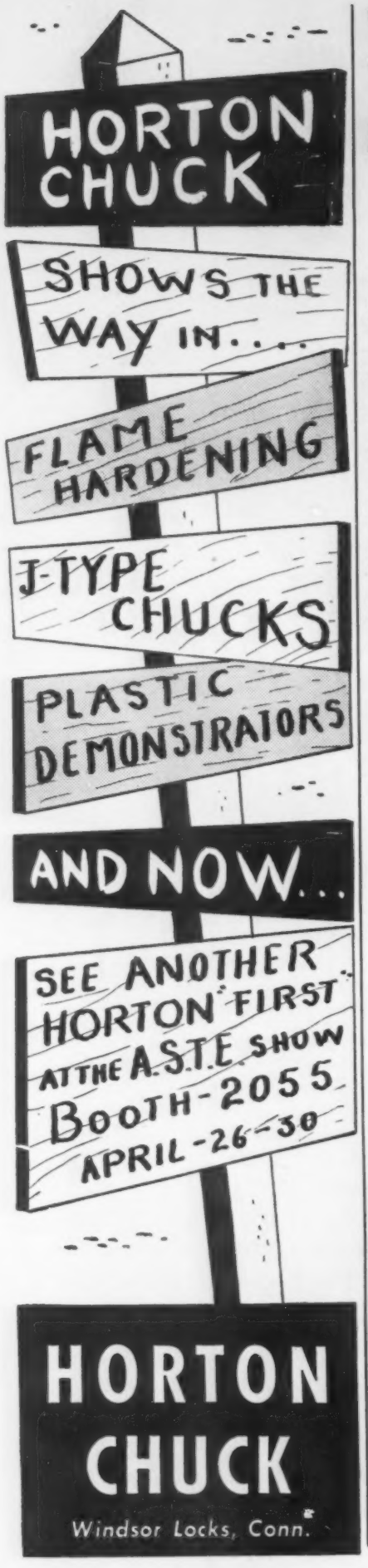
For further information on Fawick Industrial Clutch and Brake Units, write to the Main Office, Cleveland, Ohio for Bulletin 400-A.

FAWICK Airflex
INDUSTRIAL CLUTCHES AND BRAKES



Machining:

Change in tools cuts costs, improves finish.

Improved finish on highly abrasive aluminum bronze die castings, and considerably improved tool life have been attained by Master Machinery Builders, Detroit, through use of cemented carbide tooling.

How to produce this complex part for the control assembly of a medium tank without ruining tools to the point of no return was a problem faced by the company. Even tapping 12 holes with a No. 5-40 steel tap, for example, wore the tap beyond possibility of economical repair. Finish to within 30 microinches was specified.

Eliminate Rejects

Both problems were licked by using cemented carbides. With carbides, tool life jumped 2400 times. Over 200 parts were produced per tool grind. And to date, nearly 3000 parts have been completed without a single reject. Carboloy grade 78B, brazed to standard tools made by Carboloy Dept. of General Electric Co. were used.

Takes Seven Hours

Complete machining of a single part, for example, requires about 7 hours. The work is done on a Warner & Swasey No. 3 turret lathe, and involves the use of special jigs and fixtures to handle a sequence of 40 operations such as turning, facing, boring, chamfering and reaming.

Machining diecasting . . .

Eight of these operations are performed with a standard Carboloy single-point tool. The first operation, for example, is an outside diameter turning job involving a single-point tool. This is followed up with boring and reaming requiring the use of a special jig.

Operations Combined

The turning operation is run at 560 sfm as are the subsequent facing operations, a couple of which involve two tools facing both sides of the work simultaneously.

In the entire operation Master Machinery makes use of two jigs and new turret mounts after the initial 14 operations. The use of jigs enables the company to combine as many as three operations on one machine.

Grade 78B carbide cutting tool is used for machining the outside diameter of this high abrasive aluminum-bronze diecasting. Over 200 parts per grind are produced.

IF YOU WANT MORE DATA

You may secure additional information on any item briefed in this section by using the reply card on page 105. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

Welding Issue Reprints

You'll find answers to some of your toughest welding problems in THE IRON AGE Special Welding Handbook. A few reprints of this special feature are still available and may be obtained without charge by writing Readers' Service Dept., THE IRON AGE, 100 East 42nd St., New York 17.

Safety:

ASA color code broadened to include new hazards.

More safety for the man on the job is the purpose of the new American Standard Color Code, just revised and released to industry.

The American Standard Safety Color Code for Marking Physical Hazards and the Identification of Certain Equipment is the revision of a war standard. It uses three new colors needed to warn workers against potential dangers.

Purple for Radiation

The recently-born radiation perils will be announced by high-visibility purple. This color was adopted into the Code from the Atomic Energy Commission, who employs the color in a broken-propeller-shaped symbol.

The code suggests that purple be used in rooms and areas, indoors and outdoors, where radioactive materials are stored or handled. Burial grounds for this material and contaminated equipment are also marked by this color. Purple signal lights may be used to indicate when radiation-producing machines are in operation.

For Dangerous Parts

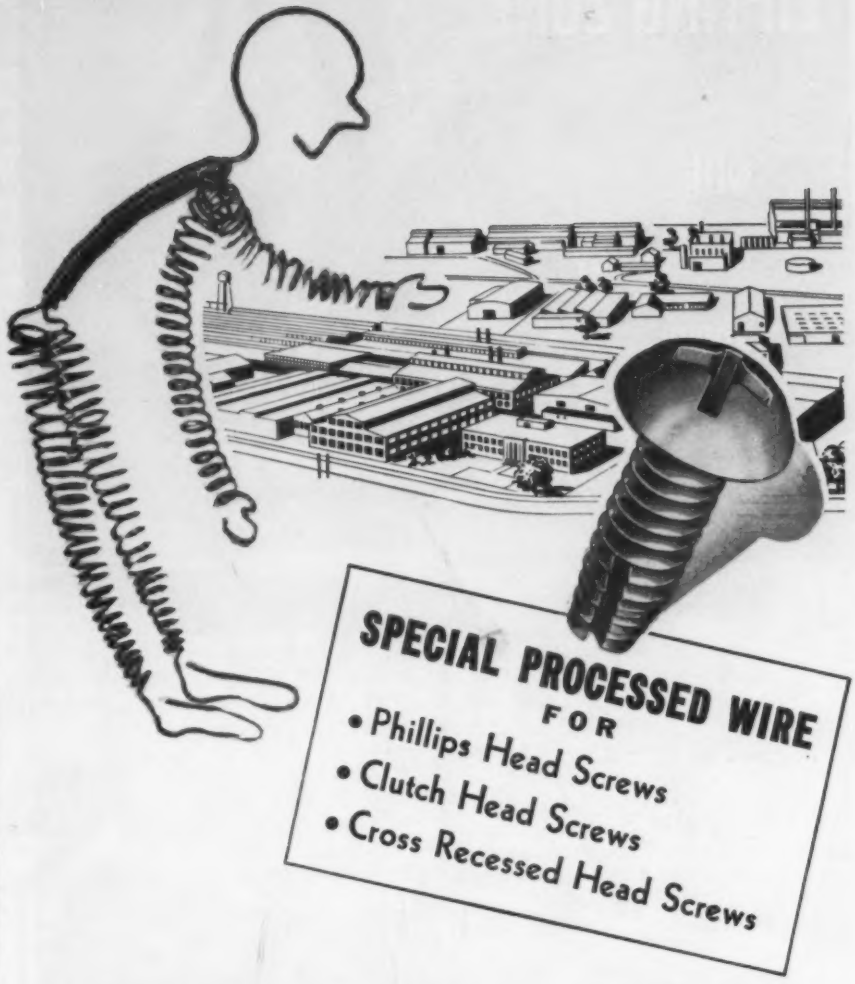
Two other colors added to the revised code are: Orange, will be used to designate dangerous parts of machines or energized equipment that may cut, crush, mangle or otherwise injure, and to emphasize dangers from exposed or unguarded parts of machines.

Blue, long used as a signal by railroads, will warn employees not to attempt to operate machines while down or under repair.

Basic Colors Remain

The revised edition of the War Standard is expanded in detail. It includes technical definitions so that the colors recommended can be reproduced and lists physical

Turn Page



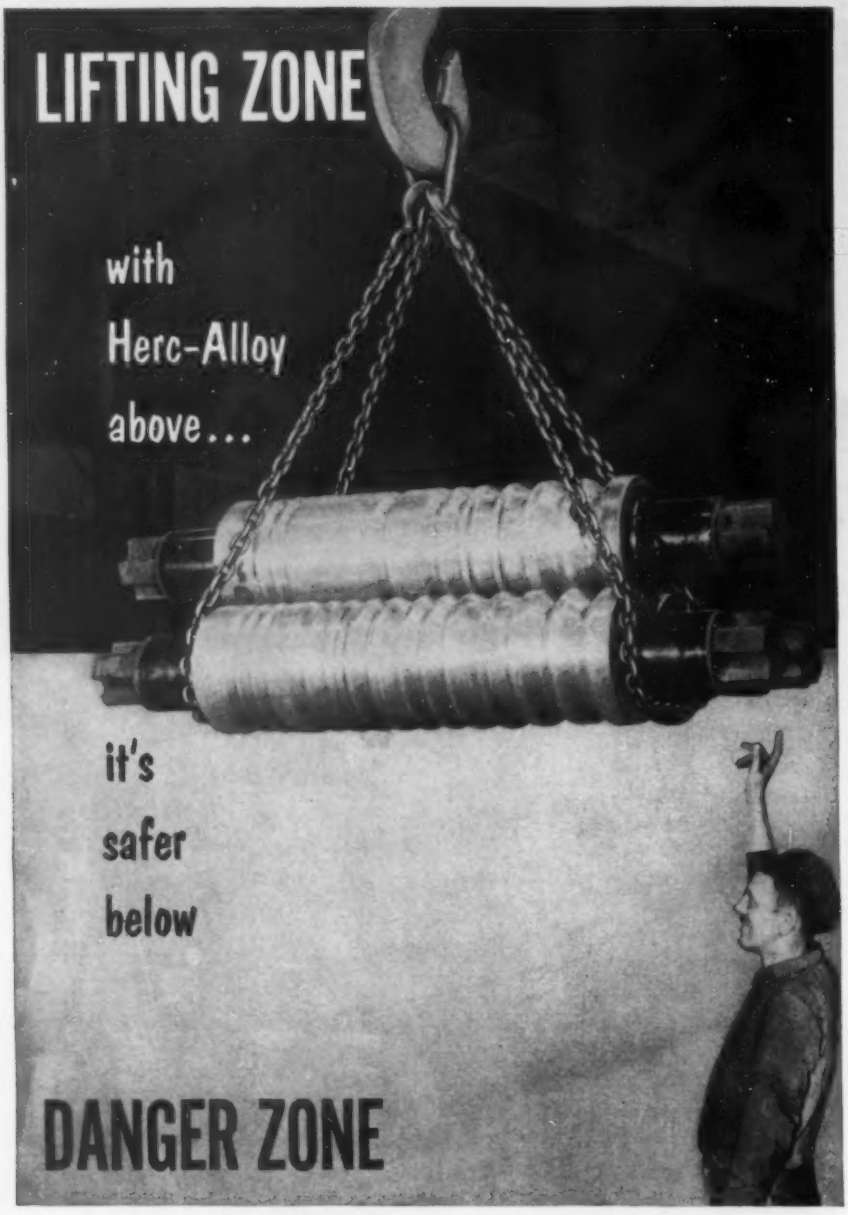
PRODUCTION CAPACITY DOUBLED

To keep pace with the rapid increase in the use of recessed head screws, Keystone is doubling its capacity in the manufacture of "Special Processed" wire.

The unusual qualities of Special Processed Wire are recognized by licensed manufacturers of recessed head screws. This wire has also proved itself superior on many other difficult cold heading jobs.

Our additional capacity will enable us to meet the ever-increasing demand for "Special Processed" wire by our present customers and at the same time welcome new customers.

Keystone Steel & Wire Company
PEORIA 7, ILLINOIS



SPECIFY

HERC-ALLOY

SLING CHAINS

Write for Data Book

HERC-ALLOY

Sling Chains are registered by individual serial number and can be rebuilt or replaced at any time to original specifications.

The Allegheny Ludlum Steel Corp., pictured above, uses Herc-Alloy Sling Chains for hundreds of tough lifting jobs in its plants. In addition to maximum safety, Allegheny Ludlum also enjoys the extra economy of longer-lasting Herc-Alloy. These sling chains offer still another advantage...a weight reduction unmatched by any other alloy chain without any sacrifice in tensile strength. This reduces worker fatigue. All things considered, don't you think Herc-Alloy Sling Chains are worth a try in your plant.

MADE BY

COLUMBUS McKINNON CHAIN CORPORATION

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General Offices and Factories: TONAWANDA, N. Y. • *District Offices:* New York, Chicago, Cleveland

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samples to aid in putting the recommendations into effect.

Still a part of the code are the long-used, nationally accepted:

Red for danger and fire.

Yellow for caution, and physical hazards, such as striking against, falling, tripping, etc.

Black and white for traffic, dead ends, stairways, directional signs, and housekeeping signs.

Green for the location of safety equipment.

Fixtures:

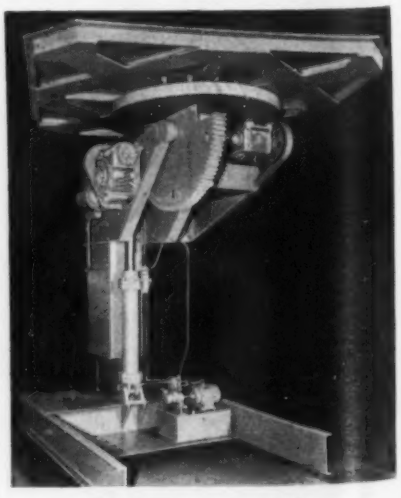
Improved positioners speed weldment production.

Major problems involved in use of weldment positioners, especially under heavy loads are: (1) Where to absorb the large torques that are developed. (2) How to efficiently prevent "drifting" of the positioner table under these heavy loads. (3) Positioning the load smoothly, continuously and accurately.

An answer to these problems has been developed by Pandjiris Weldment Co., St. Louis, by using double-enveloping worm gear speed reducers, manufactured by Cone-Drive Gears, Div. Michigan Tool Co., Detroit, to drive their positioners.

Three-Way Movement

Typical of these welding positioners is a 40,000-lb unit. The three-way movement of the posi-



. . . Welding positioner

tioner table locates work for down-position welding either for hand, semi-automatic or full-automatic welding.

Any load placed on the positioner table is absorbed as torque at the output shaft of the speed reducers. A 70:1, 10-in. center distance standard speed reducer, which must absorb torques up to 150,000 in.-lb, drives the tilting system.

Another 70:1, 7-in. center distance standard speed reducer, which must absorb torques up to 52,000 in.-lb, drives the rotating system. The table may be tilted in an arc of 135° and rotated a full 360°. In addition, it can be elevated vertically up to 4 ft through a built-in hydraulic lift system.

Drive Systems Under Table

A 15 hp motor drives the worm gear of the 10-in. center distance speed reducer at 1140 rpm. A 10 hp motor drives a Reeves variable transmission system, which in turn provides a variable input to the worm gear of the 7-in. center distance speed reducer.

Both the rotating and tilting drive systems are fixed to the underside of the positioning table. Compact speed reducers were specified to meet requirements.

Flame Plating:

Service life increased by applying tungsten carbide.

Flame plating has increased the productive life of steel core rods used by the American Meter Co., Erie, Pa., as much as ten times. A standard steel rod 0.025-in. in diam produced 60,000 bronze alloy meter bushings.

Flame plated, the same type rod produced over 400,000 bushings. Similarly, the productive use of a rod 0.294-in. in diam was increased from 60,000 parts to 600,000 with a 0.0001-in. wear—well within the tolerance of plus or minus 0.001 in.

Flame plating is a method of applying tungsten carbide to the sur-

Turn Page

(Advertisement)

How to Save on STAMPINGS

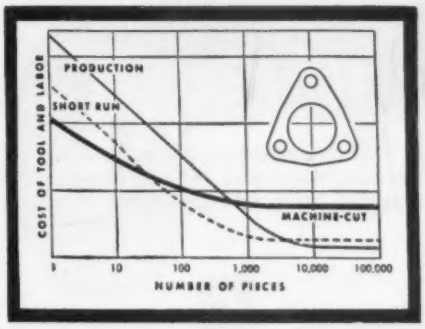
A COST-SAVING, VERSATILE APPROACH TO THEIR MANUFACTURE

Possibly you've always thought that a quick look at the quantity involved decides how a stamping shall be made. Sometimes it is done that way but it isn't the sure way to lowest costs.

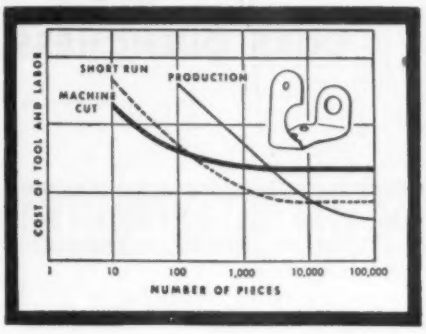
A more scientific approach by the STAMPINGS DIVISION of the Laminated Shim Company in Glenbrook, Connecticut frowns on the term "short run stamping." There is what is known as the short run *method* but there is no definite dividing point between short run and production quantities. Contour, tolerances, material, many other items all affect the manufacturing method when costs are being carefully figured.

NO ONE METHOD IS ALWAYS CHEAPEST; THREE ARE NEEDED

Machine-Cut Method: The STAMPINGS DIVISION goes one step further than Short Run and Production Methods. The Machine-Cut Method, though not strictly a stamping operation is a valuable addition to stamping procedure. Custom built slitters, cutters, saws and files use experience-gained techniques to fashion the smaller quantities of parts. No dies are made; only stock punches are used. Obviously labor cost is understandably high but there is no tool charge.



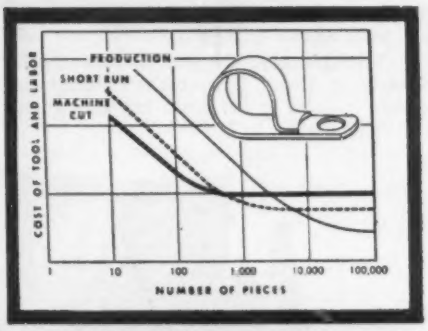
Short Run Method: As quantities increase (and depending upon the complications of contour, material, etc.) the economy of a temporary blanking die must be considered to eliminate the labor expense of machine-cutting. When this point is reached, manufacture is by the Short Run Method and the blanking is supplemented by other bench press operations. Here labor cost is at a medium level but a modest tool charge is incurred.



Production Method: As quantities increase the Production Method using standard dies with high speed automatic presses becomes more attractive. A relatively high tool charge can then be amortized over a great number of parts. Labor charge is negligible.

The Production Method as developed by the STAMPINGS DIVISION is offering unusual cost saving possibilities because of the new low-cost, full service Hecht-type die developed by the company for certain applications.

It is interesting to note that sometimes a very small quantity of parts would require a standard die because of complications or close tolerances or tough materials involved. Thus occasionally a very small quantity goes into the production classification.



LOWEST COST IS ASSURED WHEN SUPPLIER HAS ALL THREE METHODS

The illustrations show typical stamped parts along with relative costs and breaking points for each of the three manufacturing methods. Unless a supplier can offer all three, his costs cannot always be low. For a given quantity, only *one* method can be most economical.

ONE OR ONE MILLION PARTS FROM SAME SUPPLIER

An important corollary to the above is that an experimental part in small quantities can be handled by the same supplier when full production quantities are needed.

Further, it is important that a supplier be fully informed, if possible, on later or total requirements for a given part. As the charts point out, such information will affect manufacturing method and make possible cost reductions.

FURTHER INFORMATION AVAILABLE

An illustrated 12 page brochure describing in greater detail the methods mentioned above is available on request to the

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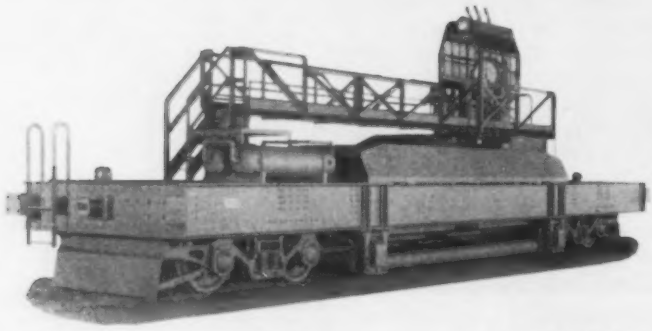
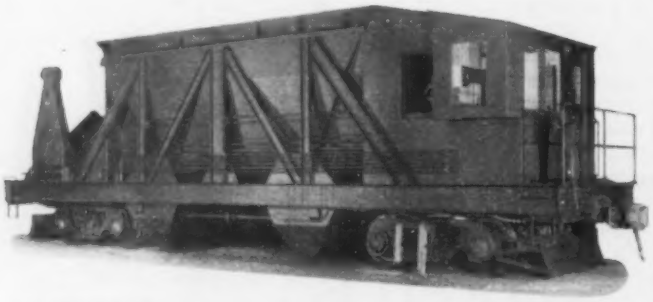


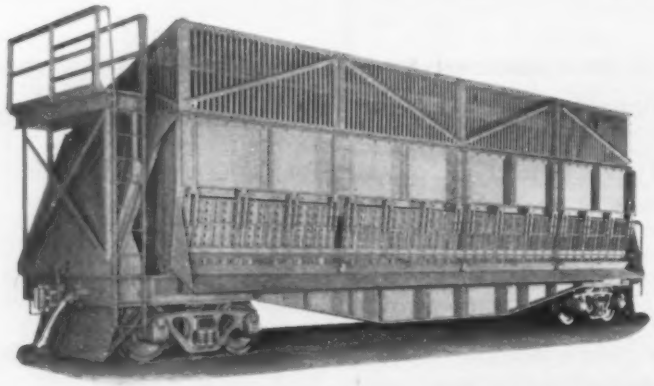
30 Ton Double Hopper Bottom Scale Charging Car. Operator's platform is above hopper to facilitate bin operation.

SCALE CARS



ORE TRANSFERS

60 Ton Center Bottom Dump Ore Transfer Car. Equipped with pneumatically operated balanced type pusher arm.



Coke Quenching Car. Motor-operated cast steel discharge gates. Bottom, ends and front are abrasive resistant steel plates.

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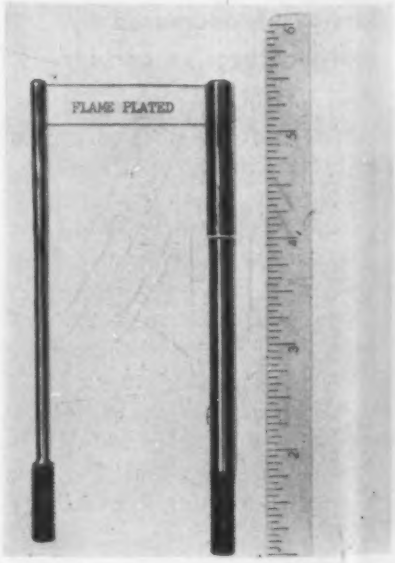
face of metal parts. The deposit is made in a hard, wear-resistant coating that can be applied in thicknesses ranging from 0.002-in. to 0.10 inch.

Low temperature deposition is a major advantage of this new process. The base metal does not exceed 400°F while being coated. This eliminates the chance of a change in physical properties of base metal, and reduces to a minimum the possibility of distortion.

Tests show that the flame plated coating has a low modulus of elasticity in comparison with solid sintered tungsten carbide. This is desirable because any load applied to a part will cause some deflection. A low modulus coating on the base metal will also deflect under the load rather than maintain extreme rigidity and possibly crack.

Flame plated parts . . .



. . . More wear resistant

Turn Page

—Technical Briefs—

Tooling:

Turning time cut with tungsten carbide tooling.

Rough turning time for 5½ by 18½-in. long SAE 4340 steel housing assemblies (Bhn 300) was recently reduced from 45 to 18 minutes by switching from high-speed steel tools to standard tungsten carbide tooling.

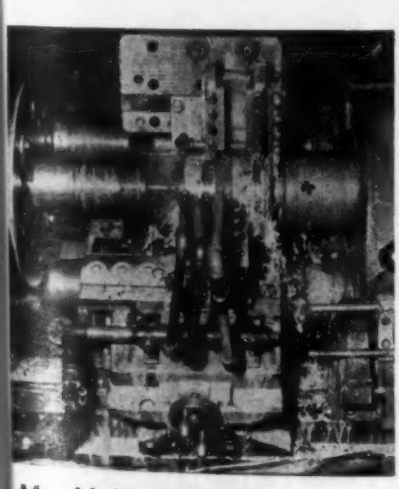
This operation performed on a 50-hp Fay Automatic at Carnes & Mitchell Machine Works, Los Angeles, consists of reducing the assembly's diameter to 3¾-in. and leaving a 30° profile in the center and a 5½-in. diam flange on each end of the workpiece. Metal removal per piece amounts to approximately 53½ lb.

How Tools Are Set Up

Three tools in the back slide plunge cut the relief grooves and face the flange. Two tools in the front slide rough turn the workpiece's diameter and center profile.

Heretofore, this operation was performed with high-speed steel tools at 60 rpm, 0.009-in. feed on the back slide, 0.012-in. feed on the front slide, and 0.435-in. depth of cut for the two passes.

These tools machined only one-half workpiece per tool grind. Tool grinding and setting time per piece amounted to approximately two hours.



Machining time cut . . .

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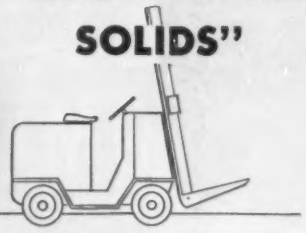
3 REASONS WHY MONARCH IS "KING OF THE SOLIDS"



1 INDUSTRIAL TIRE RESEARCH AND DEVELOPMENT

For more than 20 years, MONARCH's research men have concentrated on developing tire stocks that feature outstanding wear resistance and service life. Tests that simulate severe lift truck operating conditions are made *continually* to analyze and improve these special stocks. As a result, MONARCH supplies performance-proven industrial solid tires . . . the best available today.

2 INDUSTRIAL TIRE DESIGN

MONARCH engineers, working with lift truck manufacturers, have created tire and tread designs that cushion shocks and shock loads . . . assure maximum stability on short turns and high lifts . . . have superior non-skid qualities . . . steer easily . . . wear evenly under hard usage. These characteristics minimize maintenance costs and fatigue for vehicles, loads, floors and drivers.

3 INDUSTRIAL TIRE PRODUCTION

MONARCH specializes in solid and Mono-Cushion® types of industrial pressed-on tires. As a leading supplier, MONARCH has a type and size to meet every lift truck requirement. All research, engineering and production facilities are directed to the continual improvement of the complete line. MONARCH tires are mass-produced by modern equipment. High quality and performance are assured through carefully controlled production techniques and by selection of only the best raw materials.

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YOUR NEAREST MONARCH TIRE DEALER is listed in the Yellow Pages, under "Trucks-Industrial-Parts & Supplies" or "Tires-Industrial". If current directory does not have a listing, write direct for complete catalog and name of nearest dealer.

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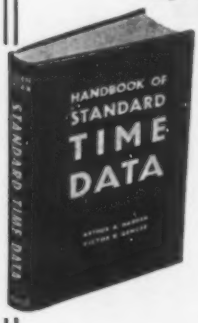
HANDBOOK OF STANDARD TIME DATA

For Machine Shops

Arthur A. Hadden and Victor K. Genger,
McClure, Hadden & Ortman, Inc., Mgt. Engineers



JUST OUT — First one-volume source for all tested, detailed standard data needed for establishing machine shop time values. Provides separate tables for each common type of machine tool. Specifications for manual operations recognize such variables as weight of piece, transportation, etc. Recommendations for machining and tables for machine elements based on type of equipment, amount of material to be removed, etc. *87 forms, tables, 474 pages.* **$10**

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—Technical Briefs—

Operation is now handled at 3.8 times the previous speeds and double the previous feeds utilized with three standard Kennametal grade K2S brazed tools in back slides. Two of these are style C-86, one style C-66, and two are standard square insert Kennamatics of style SBR-86A in the front slide.

Speed is now 230 rpm and 331 sfpm. Feed is 0.024-in. for the front slide and 0.018-in. for the back slide. Although three cuts at 0.300 to 0.350-in. depth are required, machining time has been reduced by 60 pct.

More Pieces Per Grind

Eighty pieces per grind are obtained from the square insert carbide tools (ten pieces per indexable cutting edge, four new cutting edges on each end of the insert). Tool grinding and setup time per piece is today only 10 minutes or 1/12 of the time previously required.

Selling:

Stowaway drill units make demonstration easier.

An ingenious car-trunk operating display has simplified demonstration of self-contained Rockwell (formerly Delta) air-hydraulic drill units for Rickard & McCone Co., of Southern California.

Electricity is supplied to the unit through a 50-ft electrical cord, which is plugged into any available outlet. Air is provided from a specially built 30-gal air storage tank.

A dial indicator attached to the unit helps demonstrate the precision depth control, to within 0.0001 in., feature of the unit.

. . . Drill fits car trunk

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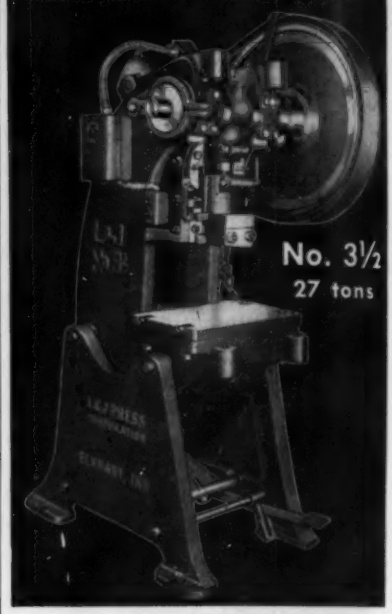

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Strokes per minute	120
Ram stroke, standard	2½"
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Die space, standard*	8¼"
special,* up to	12¼"
Bolster plate area	21½" x 13"
Opening through back	10"

*bed to ram, stroke down, adjustment up

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Casting:

German production of centrifugally cast pipe described.

Applications of centrifugal casting, originally intended for the production of cast-iron "spun pipe," have of late years been considerably extended.

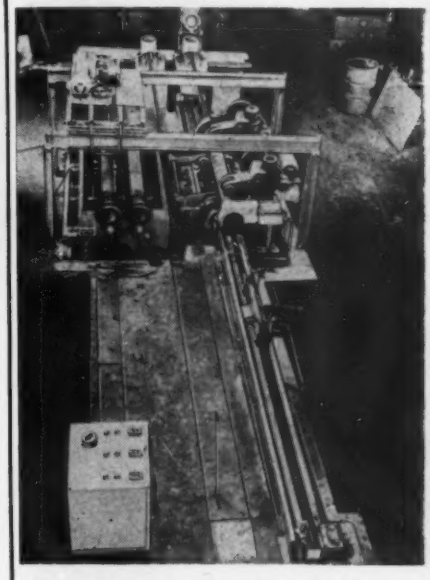
Most initial difficulties, such as the separation of the constituents of certain classes of alloy, have been overcome, and the method is now used for casting steel and alloys in a wide range of applications.

Type Machine Used

According to the form and dimensions of the pieces to be cast, a centrifugal casting machine may have either a horizontal or a vertical rotating axis.

The former type is used for castings with a length several times the diameter, while the latter is used for those having a large diameter compared with the length or height.

A plant of the horizontal-axis type as used by the firm of Ardeltwerke G.m b.H., of Wilhelmshaven, for the production of cast-iron pipe, embodies the latest German practice in this field. Bushes, pots, rings, and form pieces, in cast iron or nonferrous metals, are made.



Centrifugal casting unit . . .

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—Technical Briefs—

Pouring equipment consists of trolley with receiving ladle . . .

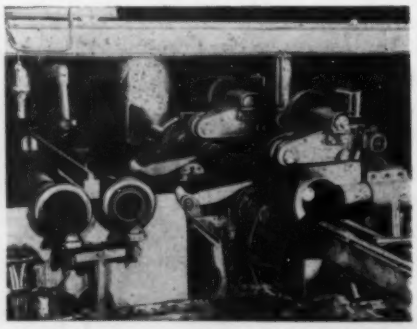
Main item of a pipe installation is the casting machine. This consists of a foundation plate on which are mounted the bearings carrying four rollers which serve to support and rotate the mold.

Between the bearings is a hydraulic cylinder for insertion and extraction of the mold, and two hinged steady arms are provided to maintain it on its supporting rollers when rotating.

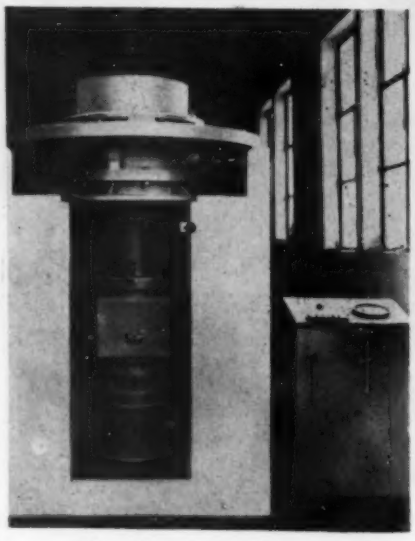
Carries Four Molds

Pouring equipment consists of a trolley running on rails, with receiving ladle and pouring ladle with extended spout. The drawbench for withdrawing the cast pipe from the mold has an electrically-operated carriage with gripping tongs, with a discharge chute alongside.

The mold magazine is a steel



Produces cast iron pipe . . .



. . . Vertical casting unit

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"ESTABLISHED 1914"
LANSING 2 MICHIGAN

DoALL 20" MONOLIGHT
lets you inspect flatness of large surface areas or groups of parts

- Checks flatness in millionths
- 30" x 30" work area
- 20 foot-candle intensity
- Mercury light

Consult your yellow Directory for location of nearest of the thirty-eight DoALL Sales-Service Stores that stock complete metal working necessities.

Call Your DoALL Service-Store

Machine Tools Cutting Tools Measuring Instruments
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The DoALL Company, Des Plaines, Ill.

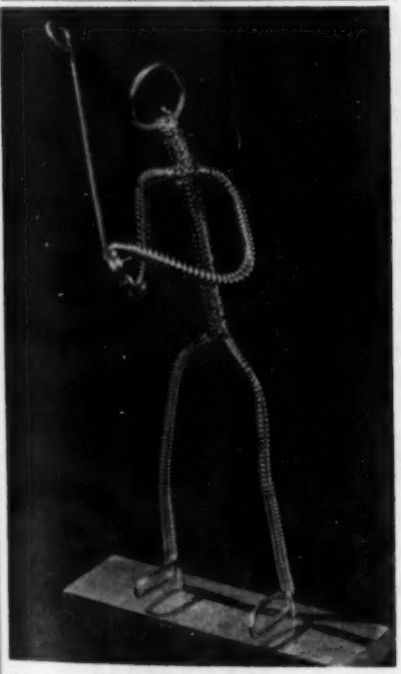
Metal is first run into receiving ladle of pouring trolley . . .

frame having a capacity of four molds, and is equipped both with gas burners for preheating molds and air-blast equipment for cooling.

Rotation of the molds in the magazine is effected by a separate electric motor through reduction gearing. An overhead trasnport crane serves for mold-changing.

In operation metal is first run into the receiving ladle of the pouring trolley. This trolley which runs on a sloping rail track is advanced until the long pouring spout reaches the further end of the heated mold contained in the casting machine, which is already in rotation.

As soon as the spout reaches the rear end of the mold, the receiving ladle is slowly and automatically tilted and the metal flows through the spout into the rotating mold.



ELECTROPOLISHING gives this stainless steel wire sculpture its bright lustrous finish. Golfer with "nerves of steel" was fashioned by John Kreml, member of the research staff of Armco Steel Corp., Baltimore. Material is 18-8 stainless.

Turn Page

"No, Pete hasn't been here 40 years — he hit the jack pot by suggesting EXL-DIE."

COLUMBIA TOOL STEEL COMPANY • CHICAGO HEIGHTS, ILL.

Producers of fine tool steels — All types immediately available through Sales Offices, Warehouses and Representatives in Principal Cities.

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Digest of the Week in Metalworking

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Everybody knows this sign

stands for railroad crossings

. . . and smart gear buyers

know this sign CINTI stands for

the best in custom gears.

CINTI "Gears...Good Gears Only"

THE CINCINNATI GEAR CO. • CINCINNATI 27, OHIO

You Can Cut Cost Per Hole with DoALL Reamers because:

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3. DoALL stocks more sizes and types than anyone else — "specials" with others are standard at DoALL.

Call DoALL—see classified directory for nearest DoALL Service-Store. Cutting tools, gages, tool steel, supplies in stock.

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The DoALL COMPANY

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IT PAYS TO READ IRON AGE ADS TOO!

•

Stainless:

High alloy castings speed antibiotic production.

Cast stainless alloy components are playing a vital role in production of antibiotics by many pharmaceutical companies.

Purity is an important factor in pharmaceutical production. But severe temperature, pressure and corrosion conditions are also found in the general chemical process industries.

In many processes, even one part per million of a corrosion product would ruin an entire production run. Problems of purity became particularly appreciable when war demands for antibiotics forced the pharmaceutical industry to produce biotics on a large scale.

Stainless Alloys Helped

As pumps, valves, fittings, mixers and the like, cast stainless alloys contributed much to the successful solution of transition problems. It is quite likely that without the availability of these strong, rugged, corrosion-resistant cast components, large-volume production of antibiotics and other modern pharmaceutical products would not have been possible.

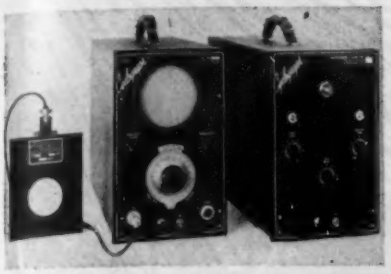
From the group of alloys offering a wide range of corrosion resistant properties, the cast austenitic chromium-nickel types containing 19 pct Cr, 9 pct Ni have been frequently chosen for antibiotic process equipment because of their strength, ductility and good fabricating qualities.

Alloy Modifications

Shown in the accompanying table are five standard modifications of this general class identified by Alloy Casting Institute symbols. The CF-8 and CF-20 alloys are applied mainly in acid solutions which are strongly oxidizing. Both weak and concentrated alkaline solutions also are resisted by these grades.

Where welding is involved, columbium-containing type CF-8C is used to avoid susceptibility to

It's Dice For The Best in Metal Test Instruments



The CYCLOGRAPH
(Model C)
.. for unscrambling metal mixups

This instrument permits truly high speed, non-destructive sorting of raw, semi-finished or finished parts by their metallurgical characteristics. With the new Automatic Sorter Unit speeds up to 300 pieces per minute are possible with the use of suitable feeding equipment. Used by leading industrial firms everywhere.

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Non-destructive Testing and Measuring Instruments

LEWIS
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automatic, high-speed heavy-duty
WIRE STRAIGHTENING
and
CUTTING MACHINES
Sizes for .012" to ¼" WIRE
ROUNDS & SHAPES
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DIRECTORY OF TOOL STEELS

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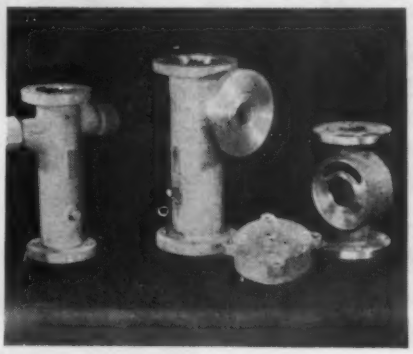
—Technical Briefs—

Stainless valves aid in producing antibiotics . . .

intergranular corrosion. Selenium addition (type CF-16F) confers improved machinability. The addition of molybdenum to the CF-8M alloy improves its resistance to reducing chemicals.



Stainless castings . . .

. . . Give good service

. . . In making antibiotics

QUANTITY PRODUCTION OF GREY IRON CASTINGS

ONE OF THE NATION'S LARGEST AND MOST MODERN PRODUCTION FOUNDRIES

ESTABLISHED 1866
THE WHELAND COMPANY
CHATTANOOGA 2, TENN.

NEW DoALL High Speed Steel SAW BANDS
Demon HIGH-SPEED STEEL

- Up to 10 times faster cutting!
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- Full Safety Blade

Has red heat hardness

Teammate for new DoALL Contour-Matic Band Machines for contour sawing and new DoALL Automatic Power Saw for cut-off work

Demon Precision
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¼" to 1"
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Saves time...money
All steel from one source

When you combine all your steel requirements on a single order to Ryerson you cut costs in many ways. One call—one order—save purchasing time and you also simplify bookkeeping—reduce clerical expense.

In addition, combining most carbon steel purchases under the Ryerson quantity differential plan brings further savings. And with larger quantities you often effect substantial reduction in freight on long hauls.

All these economies are possible when you call Ryerson for steel because Ryerson stocks are the world's largest and most diversified. Carbon steel, alloys, stainless—no matter what analyses you need, no matter what shapes and sizes, you can be practically certain of getting them all with just one call to Ryerson.

You can be sure of prompt delivery, too. So next time you need steel, no matter how many kinds or sizes, call your nearest Ryerson plant.

PRINCIPAL PRODUCTS

CARBON STEEL BARS—Hot rolled & cold finished
STRUCTURALS—Channels, angles, beams, etc.
PLATES—Many types including Inland 4-Way Safety Plate
SHEETS—Hot & cold rolled, many types & coatings
TUBING—Seamless & welded, mechanical & boiler tubes
ALLOYS—Hot rolled, cold finished, heat treated
STAINLESS—Allegheny bars, plates, sheets, tubes, etc.
REINFORCING—Bars & Accessories, spirals, wire mesh
BABBITT—Five types, also Ryertex plastic bearings
MACHINERY & TOOLS—For metal fabrication

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JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND • DETROIT
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the Iron Age
FOUNDED 1855
Markets and Prices

THE IRON AGE SUMMARY...

- Consumers playing inventories close to vest
- Producers still expect an upturn, but later
- Scrap tailspin slows, ingot rate down a point

Many steel consumers who started shaving inventories last summer are now slashing them to the bone. Some who originally planned to reduce their steel stocks to a 50 or 60 day supply are now aiming at 30 days' inventory or less. Lower manufacturing schedules are in some cases prolonging the time required for consumers to work off excess stocks and reenter the market.

Almost everywhere consumers reflect the opinion that when they need the steel an abundant supply will be handy. So the expensive new capacity of the industry is temporarily acting to depress the market.

Mills, of course, are keeping their more efficient equipment operating, while they relegate marginal or high cost facilities to standby status. For this reason, first quarter financial reports might be better than some people anticipate.

Producers generally agree that the order tally sheet for March is virtually completed without significant change. And they are not at all sure the upturn they expect will come in April. Yet there is a lot of confidence that steel business will ultimately improve.

There's no doubt that the public is still in a buying mood, as evidenced by the continuing high level of retail sales. But an upturn in steel will have to wait for inventory adjustments to work their way through the industrial supply line.

Some steelmakers point to an increasing number of small orders as a sign that customers are getting inventories down to desired size. Tonnage involved is not enough to raise the operating rate, but it does indicate that some manufacturers are beginning to buy in close support of manufacturing operations.

Even in Detroit, where most of the market news has been disappointing recently, there is more than a glimmer of hope. Some auto companies that had requested April shipments held up a week are now cancelling their deferments.

Warehouse business is bitterly competitive. Although most distributors say they haven't changed their base prices, concessions on freight, delivery, and extra charges are being made right and left.

Warehouses, too, have large inventories. And mills have felt a letdown in warehouse buying. About a fifth of mill shipments usually go to warehouse distributors for ultimate sale to the consumer.

The long tailspin in scrap prices showed signs of slowing this week. THE IRON AGE Steel Scrap Composite Price eased 17¢ a ton to $23.33 per gross ton, the smallest decrease registered in any week this year. In one important steelmaking area the market actually showed a little strength.

While this is nothing to cheer about yet, it is regarded as a hopeful sign by an industry that has been enduring a severe and painful readjustment since the middle of last year. It is too early to predict that scrap prices have reached rock bottom, or that an upturn is in the cards. But this market will bear close watching.

Steel Output, Operating Rates

	This Week†	Last Week	Month Ago	Year Ago
Net Tons Produced (000 omitted)	1,616	1,652	1,779	2,288
Ingot Production Index (1947—49=100)	100.6	102.8	110.7	142.4
District Operating Rates				
Chicago	78.0	78.0	82.5	103.0
Pittsburgh	74.0	81.0*	89.0	106.0
Philadelphia	65.0	67.0	76.0	94.0
Valley	59.0	60.0*	72.0	103.0
West	72.0	72.5	79.5	108.0
Detroit	77.0	74.0*	73.0	108.0
Buffalo	63.5	63.5	75.0	94.0
Cleveland	67.0	60.5*	73.0	93.0
Birmingham	78.5	78.5	80.0	98.5
S. Ohio River	76.0	73.0	73.5	87.5
Wheeling	82.0	86.0	81.0	102.0
St. Louis	43.5	43.5	35.5	88.0
East	52.0	40.0*	31.0	91.0
Aggregate	68.0	69.0	74.0	100.5

Per cent of capacity for weeks in 1954 is based on annual capacity of 124,330,410 net tons as of Jan. 1, 1954. Per cent of capacity for last year is based on annual capacity of 117,547,470 tons as of Jan. 1, 1953.

* Revised.
† Tentative.

STEEL OUTLOOK — STEEL OUTLOOK — STEEL OUTLOOK

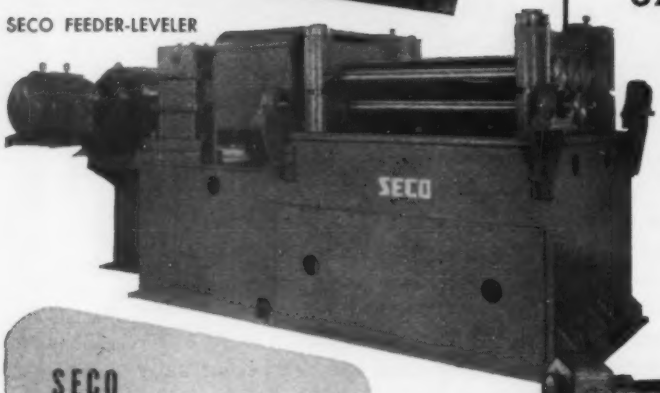
Big, New HEAVY-DUTY SECO 48" SLITTING LINE

SECO PAYOFF REEL

Sets New Standards

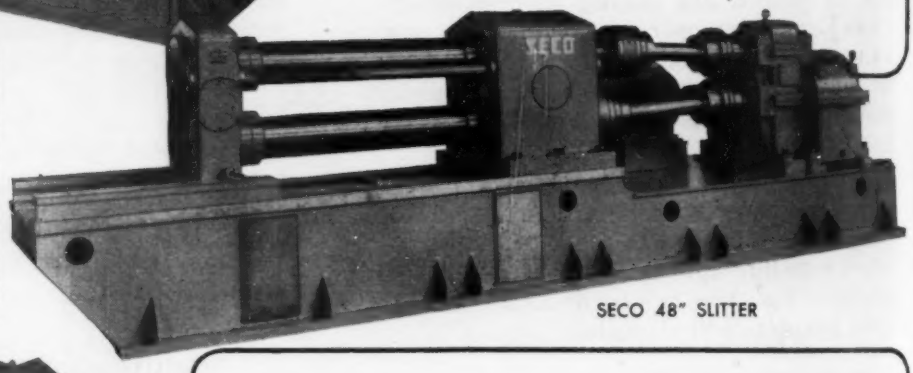
- in Performance and Production
- in Fast, Profitable Operation
- in Safe Handling of Coils Up to 32,000 Pounds

SECO FEEDER-LEVELER

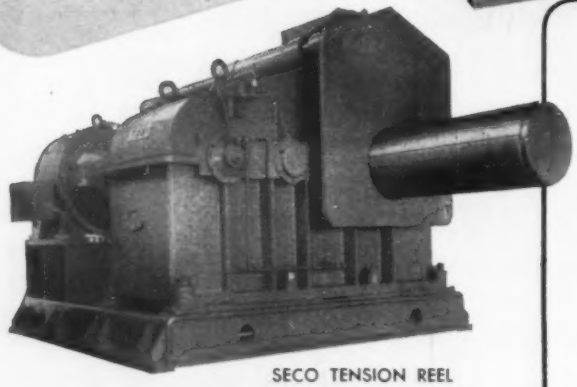


This rugged new SECO Slitting Line handles steel ¼" thick in coils 48" wide, weighing up to 32,000 pounds. The efficient, streamlined SECO Slitter, shown below, makes seven cuts in .250" stainless or low carbon steel at slitting speeds of 100 to 400 feet per minute. This slitter has overrunning clutches for pull-thru slitting. Arbors are 9½" diameter with 16" knives.

SECO SLITTING EQUIPMENT— the latest in design, engineering and efficiency



SECO 48" SLITTER



SECO TENSION REEL

Exceptional quality and accuracy are built into each piece of SECO equipment—assuring efficient, trouble-free, high production.

The Payoff Reel (top left) is of the positioning type, with power feed-up. The Feeder-Leveler is, like other SECO equipment, of the most modern design. The Tension Reel (left) has a 54" long automatic block, 22" in diameter, hydraulic stripper, 250 H.P. motor.

Call or write SECO on your requirements for slitters or other cold-rolled strip mill equipment. We're glad to furnish full information—no obligation. Our years of engineering experience and complete plant facilities are at your service.

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STEEL EQUIPMENT CO.

20805 AURORA ROAD • CLEVELAND 22, OHIO

Markets at a Glance

A-Power For Pittsburgh . . . First full-scale atomic-powered electric plant will be built in Pittsburgh by Duquesne Light Co. Atomic Energy Commission has revealed that the company will build and operate the plant at no cost to the government. Duquesne will also assume $5 million of the cost of research, development and construction of the reactor portion of the plant, which will be carried out by Westinghouse Electric Corp.

Steelworkers Recalled . . . Great Lakes Steel Corp. has now recalled 1094 of the 1904 hourly-rated employees who were laid off in January and early February. Callbacks, in order of seniority, began Feb. 15.

Ferrocolumbium Prices Rise . . . An increase of $3.10 per lb to a new base price for ferrocolumbium of $9.50 per lb of contained columbium will be made effective Apr. 1 by Electro Metallurgical Co. Increase is due to the government's recent decision to discontinue paying the 100 pct bonus on the market price of all columbium and tantalum ores and pass the cost on to users.

Corporate Earnings Up . . . A tabulation by The National City Bank of New York of the annual statements for the year 1953 published to date by 2359 corporations in all lines of business shows combined net income of approximately $9.9 billion after taxes, compared with $9.0 billion in 1952.

Cut Export Prices . . . U. S. Steel Export Co. last week trimmed prices on a number of steel products to make them competitive with general Eastern Seaboard quotations. Cuts ranged from $1 to $10 per ton. Some of the new lower prices are $4.69 per 100 lb for hot-rolled bars; $4.23 per 100 lb for hot-rolled concrete reinforcing bars; $4.23 per 100 lb for hot-rolled sheets 18 ga. and up; $5.87 per 100 lb for galvanized sheets. Cuts were also made on a number of wire products.

Prepares Ore Fleet . . . The 59-boat ore fleet of U. S. Steel Corp.'s Pittsburgh Steamship Div. will be readied for operation beginning Mar. 23 in preparation for the opening of the ore-hauling season on Apr. 20.

British Blow In Furnace . . . A new blast furnace, claimed to be Europe's largest, was blown in at the Appleby-Frodingham (Lincolnshire) works of United Steel Companies, Ltd.

Revise Extras . . . Jones & Laughlin Steel Corp. has increased cold-finished bar extras $1 to $2 per ton in size ranges of ½ in. to less than 3/16 in. on rounds, hexagons and squares. On flats, an additional extra of $4 per ton is established for carbon over 0.75 pct minimum of range. For flat bars, near squares, extras on two smaller sizes were increased $3 per ton, and minimum extra for close dimensions was raised $7 per ton. Several revisions were made in chemical requirement extras.

Steel Production Drops . . . American Iron and Steel Institute reports showed 7,083,000 net tons of steel produced in February. This figure represented a decline of 868,000 net tons from January's production.

Auto Sales Up . . . A statistical evaluation by *Ward's Automotive Reports* indicates a sharp upturn in February new car sales and an even more encouraging trend for March. February sales of 401,500 units were an increase of 14 pct over January. So far March sales indicate that last year's total of 520,575 units for the month may be equaled.

Furnace Shutdowns . . . To put production into line with current orders, U. S. Steel Corp. has shut down seven openhearth furnaces in Pittsburgh District—six at Edgar Thomson Works and one at Donora plant of American Steel & Wire. Two blast furnaces were taken out of production at Edgar Thomson. Decline of civilian and military orders is blamed.

Fewer Ranges Shipped . . . Shipments of domestic gas ranges in January amounted to 138,600 units, 18.1 pct less than in Jan. '53.

Prices At A Glance

(cents per lb unless otherwise noted)

	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel, base	4.634	4.634	4.634	4.376
Pig Iron (gross ton)	$56.59	$56.59	$56.59	$55.26
Scrap, No. 1 hvy. (gross ton)	$23.33	$23.50	$25.33	$44.08
Nonferrous				
Aluminum, ingot	21.50	21.50	21.50	20.50
Copper, electrolytic	29.875	29.75	29.75	30.75
Lead, St. Louis	12.80	12.55	12.80	13.30
Magnesium, ingot	27.75	27.75	27.75	27.00
Nickel, electrolytic	63.08	63.08	63.08	63.08
Tin, Straits, N. Y.	92.50	90.00	85.25	$1.21½
Zinc, E. St. Louis	9.75	9.25	9.25	11.00

Outlook Brightens as Zinc Rises

This could be the turning point . . . Smelter stocks of slab zinc may start down this month as demand tops supply . . . Magnesium sheet, plate prices cut—By *R. L. Hatschek.*

Is this the turning point for lead and zinc? That question is uppermost in the minds of both buyers and sellers of the twin metals now that prices for both have strengthened.

Trim Zinc Output . . . One of the toughest obstacles faced by zinc producers has been the ever-increasing stocks of slab held by smelters. They doubled during 1953, rising from 87,160 tons on Jan. 1, 1953, to 180,843 tons as of Jan. 1, 1954. Another 18,000 tons was added in January, bringing the total to 198,712 tons.

But producers began curtailing output last November, kept cutting more and more from their schedules. Average 1953 production of about 81,000 tons monthly had dropped to 78,561 tons in January and to 68,020 tons in the shorter month of February.

Stocks Even Out . . . While shipments in February were nothing to write home about, they were higher at 66,738 tons than the totals for the two preceding months. This indicated the start of a definite upturn in demand.

Result was that the American Zinc Institute statistics for February showed the gain in smelter stocks was almost inconsequential by comparison to the earlier leaps and bounds. The increase was only 1282 tons which brought total stocks to 199,994 tons at the beginning of this month—still formidable but no longer skyrocketing.

May Start Down . . . Seasonally higher demand for galvanized sheet at steel mills and better tone of zinc diecasting in Detroit are combining with a firmer London market to lend strength to zinc. And continued production cutbacks by smelters indicate the likelihood that March shipments may overtake production. Unfilled orders also climbed in February.

It adds up to a probable decline on stocks this month.

Consumers seem definitely aware of this healthier note. No longer are they interested in buying on an average price basis—rather, they've shifted and are trying to place orders at the current quotation. Price now stands at 10.25¢ at New York, a ½¢ boost.

Lead Stronger . . . Lead never did get into as bad a position as its twin. The London market has been fairly steady and when it moved upward, U. S. prices followed. Buying continued in fairly good volume last week after the two ¼¢ increases, then slowed when it seemed likely that no further increases were in the cards.

Outlook seems to be that lead will continue higher than zinc—but the market reversal is nowhere near as radical. Result should be a narrowing of the gap between lead and zinc prices.

Dow Cuts Prices . . . Magnesium sheet and plate prices took a tumble on Monday, falling before the ax of continuous rolling. Both commercial and specification grades are lower. Cuts range from 4 to 28 pct.

The firm also announces availability of longer and wider sheet and plate from its new continuous facilities at Madison, Ill.

Aluminum Output Up . . . If a production record could ever get monotonous the aluminum industry would show the way. January output established a new alltime high with 116,247 tons of aluminum siphoned out of the pots, an increase of about 6000 tons from December and 5702 tons above the previous record.

ALUMINUM SHIPMENTS

(Net Tons)

	Jan.	Dec.
Sheet & Plate, total	35,621	39,396
Non-Heat-Treatable	25,631	27,120
Heat-Treatable	9,990	12,276
Foil	5,213	4,961
Extruded Products, total	10,216	9,962
Soft Alloys	7,154	7,006
Hard Alloys	3,062	2,956
Tube, Drawn, total	2,867	1,986*
Soft Alloys	2,455	1,047
Hard Alloys	412	439*
Rod & Bar, Rolled	5,411	5,061
ACSR & Cable, Bare	4,177	1,992**
Wire, Other than Conductor	1,253	1,123
Forgings	1,968	2,030
Castings, total	11,819	11,816
Sand	1,125	1,243
Permanent Mold	5,165	5,131
Die	5,528	5,442

* Includes welded tube.
** Formerly classed "Electric Conductor (Aluminum Content)".

NONFERROUS METAL PRICES

(Cents per lb except as noted)

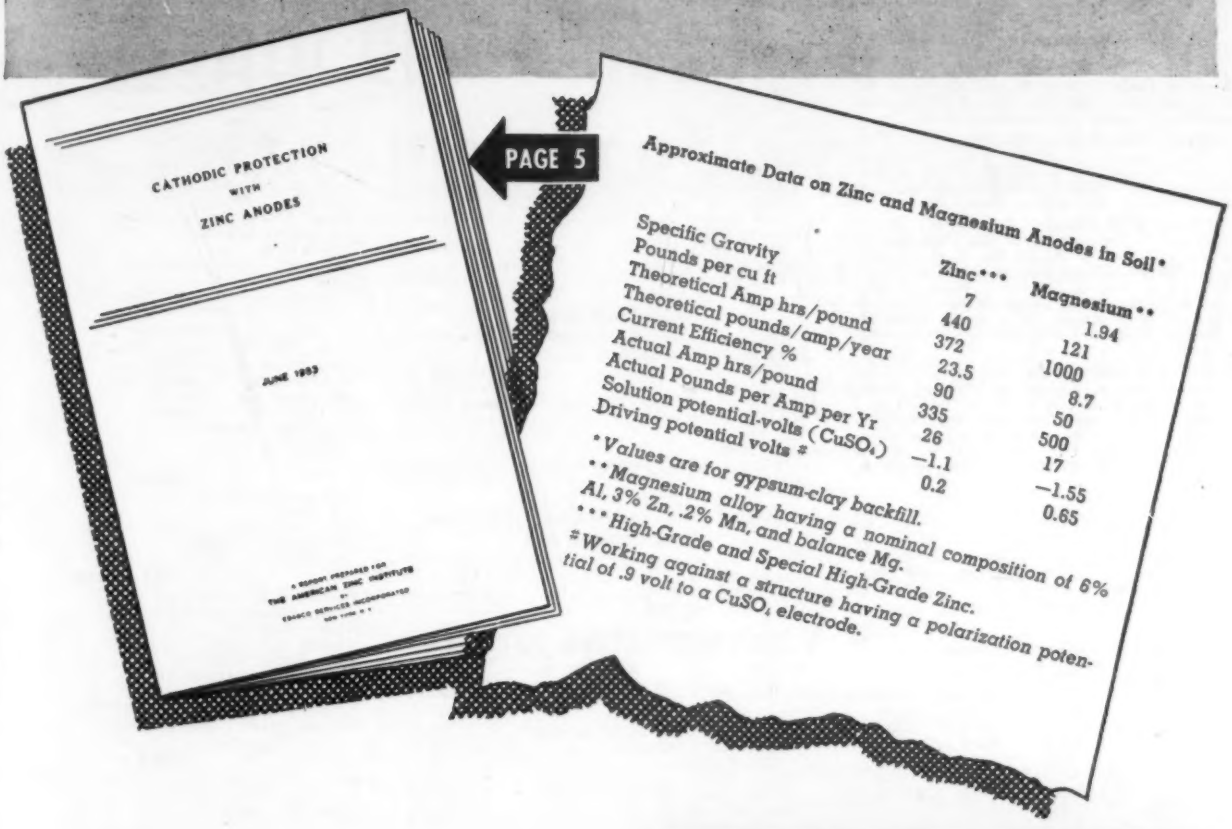
	Mar. 10	Mar. 11	Mar. 12	Mar. 13	Mar. 15	Mar. 16
Copper, electro, Conn.	29.75–30.00	29.75–30.00	29.75–30.00	29.75–30.00	29.75–30.00	29.75–30.00
Copper, Lake delivered	30.00	30.00	30.00	30.00	30.00	30.00
Tin, Straits, New York	90.00	90.50	92.75	....	92.50	92.50*
Zinc, East St. Louis	9.75	9.75	9.75	9.75	9.75	9.75
Lead, St. Louis	12.80	12.80	12.80	12.80	12.80	12.80

Note: Quotations are going prices
*Tentative

PROTECTION
through efficient self-destruction

Corrosion occurs when electricity flows from a metal surface to a surrounding electrolyte resulting in a loss of metal. No corrosion takes place where current flows from the electrolyte to the metal.

Cathodic protection is the application of direct current supplied by an external source, to oppose the flow of current from a metal surface to an electrolyte. All current discharge from the metal surface is halted when a structure is protected. The current for cathodic protection may be generated by battery action between the structure and a galvanic anode—which is a metal having a more negative solution potential than that of the metal to be protected. Magnesium and zinc are in widespread use for this purpose. The comparative properties of zinc and magnesium as anode material are shown in the table below. The data indicates that although the theoretical ampere-hour output per pound of zinc is only 37 percent of that of magnesium, the useful outputs of the two metals are comparable. The 90 percent current efficiency of zinc holds over a large range of current density and installations may be designed for life expectancies up to 30 years. Magnesium anodes have an efficiency of 50 percent at current densities generally employed, but if operated at very low current densities they may perform in such a manner that the greater part of the anode material is consumed by self-corrosion.



Approximate Data on Zinc and Magnesium Anodes in Soil*

	Zinc***	Magnesium**
Specific Gravity	7	1.94
Pounds per cu ft	440	121
Theoretical Amp hrs/pound	372	1000
Theoretical pounds/amp/year	23.5	8.7
Current Efficiency %	90	50
Actual Amp hrs/pound	335	500
Actual Pounds per Amp per Yr	26	17
Solution potential-volts ($CuSO_4$)	−1.1	−1.55
Driving potential volts ‡	0.2	0.65

*Values are for gypsum-clay backfill.
**Magnesium alloy having a nominal composition of 6% Al, 3% Zn, .2% Mn, and balance Mg.
***High-Grade and Special High-Grade Zinc.
‡Working against a structure having a polarization potential of .9 volt to a $CuSO_4$ electrode.

for Galvanic & Cathodic Protection Zinc is Standard

Zn

BUNKER HILL 99.99+% ZINC · ST. JOE HIGH GRADE ZINC

52 PAGES OF NEW DATA

For complete details on this application of zinc, write for free booklet, CATHODIC PROTECTION WITH ZINC ANODES

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Nonferrous Prices

(Effective Mar. 16, 1954)

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)

Flat Sheet: 0.136 in. and thicker, 2S, 3S, 33.9¢; 4S, 36.0¢; 52S, 38.2¢; 24S-O, 24S-OAL, 37.0¢; 75S-O, 75S-OAL, 44.7¢; 0.081-in., 2S, 3S, 35.1¢; 4S, 37.7¢; 52S, 39.9¢; 24S-O, 24S-OAL, 38.4¢; 75S-O, 75S-OAL, 46.9¢; 0.032-in., 2S, 3S, 37.0¢; 4S, 41.8¢; 24S-O, 24S-OAL, 46.9¢; 75S-O, 75S-OAL, 58.4¢.

Plate, ¼-in. and Heavier: 2S-F, 3S-F, 32.4¢; 4S-F, 34.5¢; 52S-F, 36.2¢; 61S-O, 35.6¢; 24S-O, 24S-OAL, 36.9¢; 75S-O, 75S-OAL, 44.3¢.

Extruded Solid Shapes: Shape factors 1 to 5, 36.5¢ to 82.8¢; 12 to 14, 37.2¢ to 99.0¢; 24 to 26, 39.9¢ to $1.29; 36 to 38, 47.2¢ to $1.89.

Rod, Rolled: 1.064 to 4.5-in., 2S-F, 3S-F, 43.8¢ to 37.2¢; cold-finished, 0.375 to 3.449-in., 2S-F, 3S-F, 47.6¢ to 39.3¢.

Screw Machine Stock: Rounds, 11S-T3, ½ to 11/32-in., 59.6¢ to 47.0¢; ⅝ to 1½-in., 46.6¢ to 43.8¢; 1 9/16 to 3-in., 42.7¢ to 39.9¢. Base 5000 lb.

Drawn Wire: Coiled 0.051 to 0.374-in., 2S, 44.1¢ to 32.4¢; 52S, 53.4¢ to 39.1¢; 17S-T4, 60.1¢ to 41.8¢; 61S-T4, 53.9¢ to 41.3¢.

Extruded Tubing: Rounds, 63S-T5, OD 1¼ to 2-in., 31.6¢ to 60.7¢; 2 to 4 in., 37.7¢ to 51.1¢; 4 to 6 in., 38.2¢ to 46.6¢; 6 to 9 in., 38.7¢ to 48.8¢.

Roofing Sheet: Flat, per sheet, 0.032-in., 42⅜ x 60 in., $2.838; x 96 in., $4.543; x 120 in., $5.680; x 144 in., $6.816. Coiled sheet, per lb, 0.019 in. x 28 in.

Magnesium

(F.o.b. mill, freight allowed)

Sheet & Plate: FS1-O ¼ in., 56¢; 3/16 in., 57¢; ⅛ in., 60¢; 0.064 in., 73¢; 0.032 in., 94¢. Specification grade higher. Base 30,000 lb.

Extruded Round Rod: M, diam ¼ to 0.311 in., 77¢; ½ to ⅝ in., 60.5¢; 1¼ to 1.749 in., 56¢; 2½ to 5 in., 51.5¢. Other alloys higher. Base up to ⅜ in. diam, 10,000 lb; ⅝ to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes: Rectangles: M. In weight per ft, for perimeters less than size indicated; 0.10 to 0.11 lb, 3.5 in., 65.3¢; 0.22 to 0.25 lb, 5.9 in., 62.3¢; 0.50 to 0.59 lb, 8.6 in., 59.7¢; 1.8 to 2.59 lb, 19.5 in., 56.8¢; 4 to 6 lb, 28 in., 52¢. Other alloys higher. Base, in weight per ft of shape: Up to ½ lb, 10,000 lb; ½ to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, 0.049 to 0.057 in. wall thickness: OD, ¼ to 5/16 in., $1.43; 5/16 to ⅝ in., $1.29; ½ to ⅝ in., 96¢; 1 to 2 in., 79¢; 0.165 to 0.219 in. wall: OD, ⅝ to ¾ in., 64¢; 1 to 2 in., 60¢; 3 to 4 in., 59¢. Other alloys higher. Base, OD: Up to 1½ in., 10,000 lb; 1½ to 3 in., 20,000 lb; over 3 in., 30,000 lb.

Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades; Sheets and strip, HR or CR, $15; Plate, HR, $12; Wire, rolled and/or drawn, $10; Bar, HR or forged, $6; Forgings, $6.

Nickel, Monel, Inconel

(Base prices, f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	86½	67½	92½
Strip, CR	92½	70½	98½
Rod, bar	82½	65½	88½
Angles, HR	82½	65½	88½
Plate, HR	84½	66½	90½
Seamless Tube	115½	100½	137½
Shot, blocks	....	60	....

Copper, Brass, Bronze

(Freight included on 500 lb)

	Sheet	Rods	Extruded Shapes
Copper	46.41	....	48.48
Copper, h-r	48.38	44.73	....
Copper, drawn	....	45.98	....
Low brass	44.47	44.41	....
Yellow brass	41.72	41.66	....
Red brass	45.44	45.38	....
Naval brass	45.76	40.07	41.33
Leaded brass	....	....	39.11
Com. bronze	46.95	46.89	....
Mang. bronze	49.48	43.62	45.18
Phos. bronze	66.58	67.08	....
Muntz metal	43.96	39.77	41.02
Ni silver, 10 pct	55.36	....	62.63

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	21.50
Aluminum pig	20.00
Antimony, American, Laredo, Tex.	28.50
Beryllium copper, per lb conta'd Be	$40.00
Beryllium aluminum 5% Be, Dollars per lb contained Be	$72.75
Bismuth, ton lots	$2.25
Cadmium, del'd	$1.70
Cobalt, 97-99% (per lb)	$2.60 to $2.67
Copper, electro, Conn. Valley	29.75 to 30.00
Copper, Lake, delivered	30.00
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$165 to $175
Lead, St. Louis	12.80
Lead, New York	13.00
Magnesium 99.8+%, f.o.b. Freeport, Tex., 10,000 lb, plg	27.00
Ingot	27.75
Magnesium, sticks, 100 to 500 lb.	46.00 to 48.00
Mercury, dollars per 76-lb flask, f.o.b. New York	$202 to $205
Nickel electro, f.o.b. N. Y. warehouse	63.08
Nickel oxide sinter, at Copper Creek, Ont., contained nickel	56.25
Palladium, dollars per troy oz.	$21.00
Platinum, dollars per troy oz.	$84 to $87
Silver, New York, cents per oz.	85.25
Tin, New York	92.50
Titanium, sponge	$5.00
Zinc, East St. Louis	9.75
Zinc, New York	10.25
Zirconium copper, 50 pct	$6.20

REMELTED METALS

Brass Ingot

(Cents per lb delivered carloads)

85-5-5-5 ingot	
No. 115	23.50
No. 120	22.75
No. 123	22.25
80-10-10 ingot	
No. 305	27.75
No. 315	25.50
88-10-2 ingot	
No. 210	36.50
No. 215	33.00
No. 245	28.50
Yellow ingot	
No. 405	19.75
Manganese bronze	
No. 421	24.25

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys	
0.30 copper, max.	22.50-23.00
0.60 copper, max.	22.00-22.50
Piston alloys (No. 122 type)	19.50-20.50
No. 12 alum. (No. 2 grade)	19.00-19.50
108 alloy	19.50-20.00
195 alloy	21.00-21.50
13 alloy (0.60 copper max.)	22.00-22.50
ASX-679	19.50-20.00

Steel deoxidizing alaminum, notch-bar granulated or shot

Grade 1—96-97½%	20.25-21.00
Grade 2—92-95%	19.00-19.50
Grade 3—90-92%	18.00-18.50
Grade 4—85-90%	17.00-17.50

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 5000 lb lots)

Copper	
Cast, oval, 15 in. or longer	44.54
Electrodeposited	38.38
Flat rolled	47.14
Brass, 80-20	
Cast, oval, 15 in. or longer	43.515
Zinc, flat cast	20.25
Ball, anodes	18.50
Nickel, 99 pct plus	
Cast	84.00
Cadmium	$1.75
Silver 999 fine, rolled, 100 oz. lots per troy oz., f.o.b. Bridgeport, Conn.	94⅛

Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum	63.90
Copper sulfate, 99.5 crystals, bbl.	12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed	30.00
Nickel chloride, 375 lb drum	38.00
Silver cyanide, 100 oz. lots, per oz.	75½
Sodium cyanide, 96 pct domestic 200 lb drums	19.25
Zinc cyanide, 100 lb drum	54.30

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	26	25¼
Yellow brass	19¾	18
Red brass	23	22¼
Comm. bronze	23⅞	23⅛
Mang. bronze	18¼	17½
Yellow brass rod ends	19½	....

Custom Smelters' Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	25½—25½
No. 2 copper wire	23¾—24
Light copper	22¼—22½
* Refinery brass	21

* Dry copper content.

Ingot Makers' Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	25½
No. 2 copper wire	24
Light copper	22½
No. 1 composition	18 —18½
No. 1 comp. turnings	17½—18
Rolled brass	15 —15½
Brass pipe	16 —16½
Radiators	14½—15
Aluminum	
Mixed old cast	11½—12
Mixed new clips	12½—13½
Mixed turnings, dry	11½—12½
Pots and pans	11½—12

Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

Copper and Brass	
No. 1 heavy copper and wire	23½—24
No. 2 heavy copper and wire	21½—22
Light copper	19½—20
New type shell cuttings	19 —19½
Auto radiators (unsweated)	13 —13½
No. 1 composition	17 —17½
No. 1 composition turnings	16 —17
Unlined red car boxes	14½—15
Cocks and faucets	14½—15
Mixed heavy yellow brass	11 —11½
Old rolled brass	13½—14
Brass pipe	15½—16
New soft brass clippings	16½—17
Brass rod ends	14½—15
No. 1 brass rod turnings	12 —12½
Aluminum	
Alum. pistons and struts	5½— 6
Aluminum crankcases	8½— 9
2S aluminum clippings	11 —11½
Old sheet and utensils	8½— 9
Borings and turnings	5½— 6
Misc. cast aluminum	8½— 9
Dural clips (24S)	9 —10
Zinc	
New zinc clippings	5 — 5½
Old zinc	3¾— 4
Zinc routings	2 — 2½
Old die cast scrap	2½— 3¼
Nickel and Monel	
Pure nickel clippings	60 —65
Clean nickel turnings	40
Nickel anodes	60 —65
Nickel rod ends	60 —65
New Monel clippings	22 —24
Clean Monel turnings	14 —15
Old sheet Monel	20 —22
Nickel silver clippings, mixed	13
Nickel silver turnings, mixed	11
Lead	
Soft, scrap, lead	9½—10
Battery plates (dry)	5 — 5¼
Batteries, acid free	3½
Magnesium	
Segregated solids	20 —21
Castings	19 —20
Miscellaneous	
Block tin	65 —67
No. 1 pewter	40 —42
No. 1 auto babbitt	37 —38
Mixed common babbitt	11½—12½
Solder joints	14¼
Siphon tops	95
Small foundry type	14½
Monotype	13
Lino. and stereotype	12
Electrotype	10½
Hand picked type shells	7½
Lino. and stereo. dross	4½
Electro dross	3

18-foot Monel pickling hooks like this at Pittsburgh Screw And Bolt Corporation carry payloads of 6000 pounds to increase production and cut costs.

New Pickling Line with giant Monel hooks cuts costs–increases production

The Pittsburgh Screw And Bolt Corporation, one of the world's largest producers of steel screws and bolts, wanted increased production.

To reach that goal they needed a new pickling line for the wire used in the automatic machines that make their products.

The plans called for something special in pickling hooks — hooks measuring 18 feet in length and capable of carrying a work load of 6000 pounds of coiled wire (almost a ton more than most hooks).

Naturally, they wanted hooks that would stand up under the load and the service conditions in 8 to 10% sulfuric acid solutions at 160 to 180° F.

That's why they turned to high strength, corrosion-resisting Monel®.

And, they found that Monel had the strength and stiffness it takes—with a full load the hooks showed a deflection at the end of two inches despite their comparatively light weight.

The new pickling line, using ten of the giant Monel hooks, is more productive than their old installation . . . yet costs even less to operate. And with Monel on the job, the Pittsburgh Screw And Bolt Corporation can count on long, profitable service life from their pickling equipment.

If you are contemplating new pickling equipment it will pay you to consider Monel. Many of the nation's leading plants have reported Monel pickling equipment still in good condition after more than ten years in service. In addition to high strength and corrosion resistance, Monel offers workability. It can be fabricated and welded by conventional methods without special tools or equipment.

For more information on Monel, write Inco's Technical Service Section. And ask for a copy of "5-Way Savings in Pickling."

THE INTERNATIONAL NICKEL COMPANY, INC.
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PICKLING EQUIPMENT

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extra capacity
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Sell Scrap on Commodity Exchanges?

Chicago Mercantile Exchange proposes futures trading in metallics . . . Buy and sell scrap like foodstuffs . . . Allows hedging on future price . . . Cut risks, profits in cash market.

Scrap men were wondering last week over reports that scrap could conceivably be marketed, like butter, eggs and apples, on a commodity exchange. If any action came it was expected to be an approach this week to the Institute of Scrap Iron & Steel by the Chicago Mercantile Exchange.

The general question was "why?" Most immediate advantage—buying "futures" (standardized contracts for delivery of a specified commodity in a standard grade and unit on a specified date)—permits "hedging," a device that reduces price risk in a long-term market.

The hedge seems to act as a leveler. It reduces price risk, but in a rising cash market, reduces profit. Commodity exchange would probably increase the amount of speculative capital coming into the scrap business. It could introduce another link in the chain that already includes producer, collector, dealer, broker, and consumer.

Meanwhile the scrap market across the country remained very slow. THE IRON AGE Scrap Composite fell another 17¢ to $23.33, but many in the trade felt an upturn would have to come soon.

Pittsburgh—A sharp drop in steel production this week struck a new blow at scrap market outlook in this district. Estimated production of steel is scheduled at 74 pct of capacity, off 7 points from last week. Contributing to the decline is shutdown of seven openhearths by U. S. Steel subsidiaries, one of which also suspended operation of two blast furnaces.

Chicago—In a week when mill activity was notably lacking, nonetheless somebody was feeling good. Reported broker buying in most steelmaking grades was moving up about $1, cast was moving well on the same basis, and railroad grades were doing well at the broker level as they had for the past week. Notable exceptions to the stronger market were No. 2 dealers' bundles and the electric furnace grades. No. 2 bundles continue to be virtually obsolete and are a hardship grade for most dealers who have any. Two reasons offered for the pickup in broker activity: Scrap is getting harder to get and stocks in hand are depleted by months of falling collection activity. But pessimists, viewing the falling operating rate, argue that last week's pickup was no more than a flurry, that it is doubtful it will boost mill buying prices.

Philadelphia—Before the month was half gone the scrap trade had given March up as a dud. Question now is whether April will be any better—most trade sources doubt it, saying, "It depends on the ingot rate." And that ingot rate is still slipping.

New York—The scrap trade here was generally watching and waiting. Many are convinced orders can't be covered at existing prices, say an upturn should come soon.

Detroit — Prices have reached the point where they have practically dried up sources of No. 2 grades. Dealers are laying down turnings and electric furnace grades and are fighting further drops in price. There is no local buying and only a trickle of bundles is moving out of the district.

Cleveland—Dealers here are sitting on heavy inventories waiting for more attractive offers. While their attitude indicates market may have hit bottom there are still no signs of strength in view. At the moment even production scrap is sluggish. With open market dealings at a standstill bidding on industrial lists could bull the price structure slightly in the near future.

Birmingham—Resistance by dealers to the latest cut in scrap steel prices seems to be fading, and with a few exceptions orders are being accepted and filled. The largest buyer in the district is again buying No. 2 bundles after refusing to buy bundles for the last few months. Dealers report that suppliers are bringing fair amounts of tin, but only a small amount of heavy metal is reaching the yards. Sales were fairly good this week, with some additional price cuts.

St. Louis — Buying by mills continues only on the basis of small offerings of local scrap. Because of low prices country shipments continue very light. With the drain from the Birmingham district of cupola cast and stove plate, plus some buying here, prices are up $2 a ton. Heavy railroad lists closing this week including Pennsylvania 6000 tons, with only 300 tons of rerolling rails, Texas & New Orleans 2700 tons, and Louisville & Nashville 7752 tons, including 2200 tons of rerolling rails.

Cincinnati—Many dealers and brokers sense some underlying strength. It is mainly premised on strong belief that price slide has been checked. For the past 10 days there has been very little scrap moving. Dealers generally find March prices too low. Mills which haven't already filled this month's quotas will probably wait until April for more scrap. Machine shop turnings went up $1 to $9 on the basis of firm offers to buy.

Buffalo — Sustained demand from Canadian and local sources boosted cast scrap $2 per ton here. Supplies have dwindled as Canadian buying was reported throughout western New York territory.

Boston—A flurry of limited buying in both steelmaking and blast furnace scrap served to boost prices and widen range of quotations in New England this week.

West Coast — Major western mill buyers were turning down distress scrap offerings last week, some of it as low as $10 on No. 3 bundles. Buyers generally feel the market has about hit bottom, with no immediate increase in sight until production picks up.

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Scrap Prices

(Effective Mar. 16, 1954)

Pittsburgh

No. 1 hvy. melting	$24.00 to $25.00
No. 2 hvy. melting	21.00 to 22.00
No. 1 bundles	24.00 to 25.00
No. 2 bundles	19.00 to 20.00
Machine shop turn.	10.00 to 11.00
Mixed bor. and ms. turns.	10.00 to 11.00
Shoveling turnings	14.00 to 15.00
Cast iron borings	14.00 to 15.00
Low phos. punch'gs, plate	27.00 to 28.00
Heavy turnings	21.00 to 22.00
No. 1 RR. hvy. melting	26.00 to 27.00
Scrap rails, random lgth.	37.00 to 38.00
Rails 2 ft and under	43.00 to 44.00
RR. steel wheels	33.00 to 34.00
RR. spring steel	33.00 to 34.00
RR. couplers and knuckles	33.00 to 34.00
No. 1 machinery cast.	41.00 to 42.00
Cupola cast.	34.00 to 35.00
Heavy breakable cast.	29.00 to 30.00
Malleable	27.00 to 28.00

Chicago

No. 1 hvy. melting	$23.00 to $24.00
No. 2 hvy. melting	20.00 to 21.00
No. 1 factory bundles	25.00 to 26.00
No. 1 dealers' bundles	22.00 to 23.00
No. 2 dealers' bundles	17.00 to 18.00
Machine shop turn.	9.00 to 10.00
Mixed bor. and turn.	9.00 to 10.00
Shoveling turnings	11.00 to 12.00
Cast iron borings	11.00 to 12.00
Low phos. forge crops	30.00 to 31.00
Low phos. punch'gs, plate	28.00 to 29.00
Low phos. 3 ft and under	27.00 to 28.00
No. 1 RR. hvy. melting	28.00 to 29.00
Scrap rails, random lgth.	29.00 to 31.00
Rerolling rails	35.00 to 36.00
Rails 2 ft and under	38.00 to 39.00
Locomotive tires, cut	31.00 to 32.00
Cut bolsters & side frames	31.00 to 33.00
Angles and splice bars	33.00 to 34.00
RR. steel car axles	36.00 to 37.00
RR. couplers and knuckles	31.00 to 33.00
No. 1 machinery cast.	36.00 to 38.00
Cupola cast.	33.00 to 34.00
Heavy breakable cast.	27.00 to 28.00
Cast iron brake shoes	33.00 to 35.00
Cast iron car wheels	31.00 to 33.00
Malleable	38.00 to 39.00
Stove plate	26.00 to 28.00

Philadelphia Area

No. 1 hvy. melting	$21.00 to $23.00
No. 2 hvy. melting	19.00 to 20.00
No. 1 bundles	21.00 to 23.00
No. 2 bundles	16.00 to 18.00
Machine shop turn.	10.00 to 11.00
Mixed bor. short turn.	10.00 to 11.00
Cast iron borings	10.00 to 11.00
Shoveling turnings	15.00 to 16.00
Clean cast chem. borings	24.00 to 25.00
Low phos. 5 ft and under	24.00 to 26.00
Low phos. 2 ft and under	25.00 to 27.00
Low phos. punch'gs	25.00 to 27.00
Elec. furnace bundles	22.00 to 24.00
Heavy turnings	20.00 to 21.00
RR. steel wheels	29.00 to 30.00
RR. spring steel	29.00 to 30.00
Rails 18 in. and under	39.00 to 40.00
Cupola cast.	34.00 to 35.00
Heavy breakable cast.	35.00 to 37.00
Cast iron carwheels	38.00 to 39.00
Malleable	38.00 to 39.00
Unstripped motor blocks	27.00 to 28.00
No. 1 machinery cast.	38.00 to 39.00
Charging box cast.	35.00 to 36.00

Cleveland

No. 1 hvy. melting	$20.00 to $21.00
No. 2 hvy. melting	18.00 to 19.00
No. 1 bundles	20.00 to 21.00
No. 2 bundles	15.00 to 16.00
No. 1 busheling	20.00 to 21.00
Machine shop turn.	9.00 to 10.00
Mixed bor. and turn.	13.00 to 14.00
Shoveling turnings	13.00 to 14.00
Cast iron borings	13.00 to 14.00
Cut struct'r'l plate, 2 ft & under	30.00 to 31.00
Drop forge flashings	20.00 to 21.00
No. 1 RR. heavy melting	26.00 to 27.00
Rails 3 ft and under	43.00 to 44.00
Rails 18 in. and under	44.00 to 45.00
Railroad grate bars	27.00 to 28.00
Steel axle turnings	19.00 to 20.00
Railroad cast.	39.00 to 40.00
No. 1 machinery cast.	40.00 to 41.00
Stove plate	33.00 to 34.00
Malleable	39.00 to 40.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Youngstown

No. 1 hvy. melting	$23.00 to $24.00
No. 2 hvy. melting	20.00 to 21.00
No. 1 bundles	23.00 to 24.00
No. 2 bundles	18.00 to 19.00
Machine shop turn.	9.00 to 10.00
Shoveling turnings	13.00 to 14.00
Cast iron borings	13.00 to 14.00
Low phos. plate	26.00 to 27.00

Buffalo

No. 1 hvy. melting	$22.00 to $23.00
No. 2 hvy. melting	18.50 to 19.50
No. 1 busheling	22.00 to 23.00
No. 1 bundles	22.00 to 23.00
No. 2 bundles	16.50 to 17.50
Machine shop turn.	11.50 to 12.50
Mixed bor. and turn.	13.50 to 14.50
Shoveling turnings	15.50 to 16.50
Cast iron borings	13.50 to 14.50
Low phos. plate	27.00 to 28.00
Scrap rails, random, lgth.	32.00 to 33.00
Rails 2 ft and under	39.00 to 40.00
RR. steel wheels	34.00 to 35.00
RR. spring steel	34.00 to 35.00
RR. couplers and knuckles	34.00 to 35.00
No. 1 machinery cast.	37.00 to 38.00
No. 1 cupola cast.	33.00 to 34.00

Detroit

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$15.00 to $16.00
No. 2 hvy. melting	14.00 to 15.00
No. 1 bundles, openhearth	16.00 to 17.00
No. 2 bundles	14.00 to 15.00
New busheling	15.00 to 16.00
Drop forge flashings	15.00 to 16.00
Machine shop turn.	4.50 to 5.50
Mixed bor. and turn.	6.50 to 7.50
Shoveling turnings	6.50 to 7.50
Cast iron borings	6.50 to 7.50
Low phos. punch's, plate	16.00 to 17.00
No. 1 cupola cast.	.... 35.00
Heavy breakable cast.	.... 24.00
Stove plate	.... 28.00
Automotive cast.	.... 35.00

St. Louis

No. 1 hvy. melting	$24.00 to $25.00
No. 2 hvy. melting	22.00 to 23.00
No. 1 bundles	24.00 to 25.00
No. 2 bundles	19.00 to 20.00
Machine shop turn.	8.00 to 9.00
Cast iron borings	9.50 to 10.50
Shoveling turnings	9.50 to 10.50
No. 1 RR. hvy. melting	29.00 to 30.00
Rails, random lengths	30.00 to 32.00
Rails, 18 in. and under	37.00 to 39.00
Locomotive tires, uncut	29.00 to 30.00
Angles and splice bars	31.00 to 32.00
Std. steel car axles	35.00 to 36.00
RR. spring steel	31.00 to 32.00
Cupola cast.	38.00 to 39.00
Hvy. breakable cast.	23.00 to 24.00
Cast iron brake shoes	30.00 to 31.00
Stove plate	31.00 to 32.00
Cast iron car wheels	30.00 to 31.00
Malleable	34.00 to 35.00
Unstripped motor blocks	23.00 to 24.00

New York

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$13.00 to $14.00
No. 2 hvy. melting	11.00 to 12.00
No. 2 bundles	9.00 to 10.00
Machine shop turn.	4.00 to 5.00
Mixed bor. and turn.	6.00 to 7.00
Shoveling turnings	7.00 to 8.00
Clean cast chem. borings	18.00 to 19.00
No. 1 machinery cast.	35.00 to 36.00
Mixed yard cast.	29.00 to 30.00
Charging box cast.	29.00 to 30.00
Heavy breakable cast.	29.00 to 30.00
Unstripped motor blocks	22.00 to 23.00

Birmingham

No. 1 hvy. melting	.... $20.00
No. 2 hvy. melting	.... 18.00
No. 1 bundles	.... 20.00
No. 2 bundles	$15.00 to 16.00
No. 1 busheling	.... 20.00
Machine shop turn.	.... 13.00
Shoveling turnings	.... 15.00
Cast iron borings	13.00 to 14.00
Electric furnace bundles	25.00 to 26.00
Bar crops and plate	28.00 to 29.00
Structural and plate, 2 ft	28.00 to 29.00
No. 1 RR. hvy. melting	23.00 to 24.00
Scrap rails, random lgth.	32.00 to 34.00
Rails, 18 in. and under	37.00 to 38.00
Angles & splice bars	35.00 to 36.00
Rerolling rails	32.00 to 33.00
No. 1 cupola cast.	40.00 to 41.00
Stove plate	37.00 to 38.00
Cast iron car wheels	33.00 to 34.00
Charging box cast.	23.00 to 24.00
Heavy breakable	24.00 to 25.00
Unstripped motor blocks	31.00 to 32.00
Mashed tin cans	14.00 to 15.00

Boston

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$13.00 to $16.00
No. 2 hvy. melting	9.00 to 11.00
No. 1 bundles	12.00 to 14.00
No. 2 bundles	7.00 to 9.00
No. 1 busheling	11.00 to 13.00
Elec. furnace, 3 ft & under	13.00 to 16.00
Machine shop turn.	1.00 to 1.50
Mixed bor. and short turn.	6.00 to 7.00
Shoveling turnings	7.00 to 7.25
Clean cast chem. borings	13.00 to 14.00
No. 1 machinery cast.	27.00 to 28.00
Mixed cupola cast.	23.00 to 24.00
Heavy breakable cast.	25.50 to 26.00
Stove plate	20.00 to 21.00
Unstripped motor blocks	7.00 to 8.00

Cincinnati

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$22.00 to $23.00
No. 2 hvy. melting	18.00 to 19.00
No. 1 bundles	22.00 to 23.00
No. 2 bundles	16.00 to 17.00
Machine shop turn.	8.00 to 9.00
Mixed bor. and turn.	10.00 to 11.00
Shoveling turnings	10.00 to 11.00
Cast iron borings	10.00 to 11.00
Low phos., 18 in. & under	29.00 to 30.00
Rails, random lengths	34.00 to 35.00
Rails, 18 in. and under	42.00 to 43.00
No. 1 cupola cast.	34.00 to 35.00
Hvy. breakable cast.	29.00 to 30.00
Drop broken cast.	40.00 to 41.00

San Francisco

No. 1 hvy. melting	.... $20.00
No. 2 hvy. melting	.... 16.00
No. 1 bundles	.... 19.00
No. 2 bundles	.... 16.00
No. 3 bundles	.... 12.00
Machine shop turn.	.... 5.00
Cast iron borings	.... 9.00
No. 1 RR. hvy. melting	.... 23.00
No. 1 cupola cast.	$39.00 to 40.00

Los Angeles

No. 1 hvy. melting	.... $20.00
No. 2 hvy. melting	.... 16.00
No. 1 bundles	.... 19.00
No. 2 bundles	.... 16.00
No. 3 bundles	.... 12.00
Machine shop turn.	.... 5.00
Shoveling turnings	$7.00 to 9.00
Cast iron borings	7.00 to 9.00
Elec. fur. 1 ft and under	.... 25.00
No. 1 RR. hvy. melting	.... 20.00
No. 1 cupola cast.	37.00 to 38.00

Seattle

No. 1 hvy. melting	.... $25.00
No. 2 hvy. melting	.... 21.00
No. 1 bundles	.... 22.00
No. 2 bundles	.... 16.00
No. 3 bundles	.... 12.00
No. 1 cupola cast.	.... 37.00
Mixed yard cast.	.... 35.00

Hamilton, Ont.

No. 1 hvy. melting	.... $23.00
No. 2 hvy. melting	.... 21.00
No 1 bundles	.... 23.00
No. 2 bundles	.... 19.00
Mixed steel scrap	.... 18.00
Bushelings	.... 19.00
Bush., new fact prep'd.	.... 22.00
Bush., new fact unprep'd.	.... 18.00
Short steel turnings	.... 13.00
Mixed bor. and turn.	.... 13.00
Rails, remelting	.... 33.00
Cast scrap	.... 40.00

You can't beat **Ohio Magnets** for

lower maintenance

In any application where magnets are subjected to severe blows, you need the extra structural strength of Ohio Magnets.

Take this rugged Ohio Welded Magnet. Outer ring is a single casting welded to top plate *on top* where weld can't get dented in. Add to this Ohio's strap-wound copper coils . . . longer-lasting insulation . . . non-remelting or asphaltum filling compound . . . armored terminal boxes.

No wonder Ohio Magnets require less maintenance. So for extra magnet life, extra magnet value — specify Ohio Magnets. Remember, Ohio Magnets lift larger loads longer — *especially with Ohio Magnet Controllers*. Send for Bulletin No. 112. Offices in principal cities listed in Classified Directory.

OHIO WELDED MAGNETS. 39 to 65" diameter. Lightweight models in 39 & 45". 6-coil types in 46, 55, 65"; 8-coil in 55 & 65". Weld on top where it can't get dented in. Also capsule coil over 45".

OHIO BOLTED MAGNETS. 12 to 65" diameter. 6-coil types in 39 to 65"; 8-coil in 55 & 65". Strap copper coils over 39". Bolts protected in recessed wells. Also capsule coil over 45".

OHIO BASKET MAGNETS. 55 & 65" 4-coil, & 65" 6-coil. For extra heavy-duty service; hefty ears project beyond magnet diameter, ward off damaging blows. No weight carried by bolts. Also capsule coil over 45".

ohio ELECTRIC

CHESTER BLAND *President*

THE OHIO ELECTRIC MFG. CO.

5400 DUNHAM RD. • CLEVELAND, OHIO

Ohio gives prompt service in rebuilding and reconditioning magnets

Comparison of Prices

(Effective Mar. 16, 1954)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	Mar. 16 1954	Mar. 9 1954	Feb. 16 1954	Mar. 17 1953
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	3.925¢	3.925¢	3.925¢	3.775¢
Cold-rolled sheets	4.775	4.775	4.775	4.575
Galvanized sheets (10 ga.)	5.275	5.275	5.275	5.075
Hot-rolled strip	3.925	3.925	3.925	3.725
Cold-rolled strip	5.513	5.513	5.513	5.20
Plate	4.10	4.10	4.10	3.90
Plates wrought iron	9.30	9.30	9.30	9.00
Stainl's C-R strip (No. 302)	41.50	41.50	41.50	38.48
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$8.95	$8.95	$8.95	$8.95
Tinplate, electro (0.50 lb.)	7.65	7.65	7.65	7.65
Special coated mfg. terns	7.75	7.75	7.75	7.75
Bars and Shapes: (per pound)				
Merchant bars	4.16¢	4.16¢	4.16¢	3.95¢
Cold finished bars	5.20	5.20	5.20	4.925
Alloy bars	4.875	4.875	4.875	4.675
Structural shapes	4.10	4.10	4.10	3.85
Stainless bars (No. 302)	35.50	35.50	35.50	32.98
Wrought iron bars	10.40	10.40	10.40	10.05
Wire: (per pound)				
Bright wire	5.525¢	5.525¢	5.525¢	5.225¢
Rails: (per 100 lb.)				
Heavy rails	$4.325	$4.325	$4.325	$3.775
Light rails	5.20	5.20	5.20	4.25
Semifinished Steel: (per net ton)				
Rerolling billets	$62.00	$62.00	$62.00	$59.00
Slabs, rerolling	62.00	62.00	62.00	59.00
Forging billets	75.50	75.50	75.50	70.50
Alloy blooms, billets, slabs	82.00	82.00	82.00	76.00
Wire Rod and Skelp: (per pound)				
Wire rods	4.525¢	4.525¢	4.525¢	4.325¢
Skelp	3.75	3.75	3.75	3.55
Finished Steel Composite: (per pound)				
Base price	4.634¢	4.634¢	4.634¢	4.376¢

	Mar. 16 1954	Mar. 9 1954	Feb. 16 1954	Mar. 17 1953
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$61.19	$61.19	$61.19	$60.69
Foundry, Valley	56.50	56.50	56.50	55.00
Foundry, Southern, Cin'ti	60.43	60.43	60.43	58.93
Foundry, Birmingham	52.88	52.88	52.88	51.38
Foundry, Chicago	56.50	56.50	56.50	55.00
Basic del'd, Philadelphia	60.27	60.27	60.27	59.77
Basic, Valley furnace	56.00	56.00	56.00	54.50
Malleable, Chicago	56.50	56.50	56.50	55.00
Malleable, Valley	56.50	56.50	56.50	55.00
Ferromanganese‡, cents per lb.	10.00¢	10.00¢	10.00¢	8.06¢
‡ 76 pct Mn base.				
Pig Iron Composite: (per gross ton)				
Pig iron	$56.59	$56.59	$56.59	$55.26
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$24.50	$24.50	$26.50	$44.75
No. 1 steel, Phila. area	*22.00*	22.50	24.50	44.00
No. 1 steel, Chicago	23.50	23.50	25.00	42.50
No. 1 bundles, Detroit	16.50	16.50	20.50	40.50
Low phos., Youngstown	26.50	26.50	29.50	49.50
No. 1 mach'y cast, Pittsburgh	41.50	41.50	41.50	52.50
No. 1 mach'y cast. Philadel'a.	*38.50*	39.00	39.00	49.00
No. 1 mach'y cast, Chicago	37.00	36.50	34.00	47.50
Steel Scrap Composite: (per gross ton)				
No. 1 heavy melting scrap	*$23.33*	$23.50	$25.33	$44.08
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.38	$14.38	$14.38	$14.75
Foundry coke, prompt	17.25	17.25	17.25	17.75
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	29.875‡	29.875‡	29.75‡	30.75‡
Copper, Lake, Conn.	30.00	30.00	30.00	32.125
Tin, Straits, New York	92.50†	90.00*	85.25	$1.21½
Zinc, East St. Louis	9.75	9.25	9.25	11.00
Lead, St. Louis	12.80	12.55*	12.80	13.30
Aluminum, virgin ingot	21.50	21.50	21.50	20.50
Nickel, electrolytic	68.08	68.08	68.08	68.08
Magnesium, ingot	27.75	27.75	27.75	27.00
Antimony, Laredo, Tex.	28.50	28.50	28.50	34.50

† Tentative. ‡ Average. * Revised.

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

← To identify producers, see Key on p. 183 →

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Bethlehem *B3*	58.00	58.50	59.00	59.50	.....
Birmingham *R3*	52.38	52.88	.....	.....	.....
Birmingham *W9*	52.38	52.88	.....	.....	.....
Birmingham *S5*	52.38	52.88	.....	.....	.....
Buffalo *R3*	56.00	56.50	57.00	.....	.....
Buffalo *H1*	56.00	56.50	57.00	.....	.....
Buffalo *W6*	56.00	56.50	57.00	.....	.....
Chicago *I4*	56.00	56.50	56.50	57.00	.....
Cleveland *A5*	56.00	56.50	56.50	57.00	61.00
Cleveland *R3*	56.00	56.50	56.50	.....	.....
Daingerfield *L3*	52.50	52.50	52.50	.....	.....
Duluth *I4*	56.00	56.50	56.50	57.00	.....
Erie *I4*	56.00	56.50	56.50	57.00	.....
Everett *M6*	.....	63.00	63.50	.....	.....
Fontana *K1*	62.00	62.50	.....	.....	.....
Geneva, Utah *C7*	56.00	56.50	.....	.....	.....
Granite City *G2*	57.90	58.40	58.90	.....	.....
Hubbard *Y1*	.....	.....	56.50	.....	.....
Minnequa *C6*	58.00	59.00	59.00	.....	.....
Monessen *P6*	56.00	.....	.....	.....	.....
Neville Isl. *P4*	56.00	56.50	56.50	.....	.....
Pittsburgh *U1*	56.00	.....	.....	57.00	.....
Sharpsville *S3*	56.00	56.50	56.50	57.00	.....
Steelton *B3*	58.00	58.50	59.00	59.50	64.00
Swedeland *A2*	58.00	58.50	59.00	59.50	.....
Toledo *I4*	56.00	56.50	56.50	57.00	.....
Troy, N. Y. *R3*	58.00	58.50	59.00	59.50	64.00
Youngstown *Y1*	.....	.....	56.50	57.00	.....
N. Tonawanda *T1*	.....	56.50	57.00	.....	.....

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct), 50¢ per ton for each 0.50 pct manganese over 1 pct., $2 per ton for .05 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus, content 0.70 and over.

Silvery Iron: Buffalo, *H1*, $68.25; Jackson, *J1, G1* $67.00. Add $1.50 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. Add $1 per ton for 0.75 pct. or more phosphorus. Add 75¢ for each 0.50 pct. manganese over 1.0 pct. Bessemer ferrosilicon prices are $1 over comparable silvery iron.

STAINLESS STEEL

Base price cents per lb., f.o.b. mill

Product	301	302	303	304	316	321	347	410	416	430
Ingots, rerolling	16.25	17.25	18.75	18.25	28.00	22.75	24.50	14.00	.....	14.25
Slabs, billets, rerolling	20.50–20.75	22.75	24.75	23.75	36.25	29.50	32.25	18.25	.....	18.50
Forg. discs, die blocks, rings	38.50	38.50	41.50	40.50	60.00	45.50	50.75	31.00	31.75	31.75
Billets, forging	29.50	29.75	32.25	31.00	46.50–46.75	35.25	39.50	24.00	24.50	24.50
Bars, wires, structurals	35.25	35.50	38.25	37.25	55.50	42.00	46.75	28.75	29.25	29.25
Plates	37.25	37.50	39.75	39.75	58.75–59.00	45.75–46.00	51.25	30.00	30.50–31.00	30.50
Sheets	46.25	46.50	48.75	48.75	64.50	55.50	60.75	40.75	41.25	43.50
Strip, hot-rolled	29.75	32.00	36.75	34.25	55.00	42.00	46.50	26.25	.....	27.00
Strip, cold-rolled	38.25	41.50	45.50	43.75	66.50	54.50	59.25	34.25	41.25	34.75

STAINLESS STEEL PRODUCING POINTS

Sheets: Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* McKeesport, Pa., *U1;* Washington, Pa., *W2, J2;* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2;* Ft. Wayne, *J4;* Lockport, N. Y., *R4.*

Strip: Midland, Pa., *C11;* Cleveland, *A5;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2;* Washington, Pa., *W2;* W. Leechburg, Pa., *A3;* Bridgeville, Pa., *U2;* Detroit, *M2;* Canton-Massillon, O., *R3;* Middletown, O., *A7;* Harrison, N. J., *D3;* Youngstown, *C5;* Lockport, N. Y., *S4;* Sharon, Pa., *S1;* Butler, Pa., *A7;* Wallingford, Conn., *U3* (.25¢ per lb higher) *W1* (.25¢ per lb higher); New Bedford, Mass., *R6.*

Bars: Baltimore, *A7;* Duquesne, Pa., *U1;* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa. *J2;* McKeesport, Pa., *U1, F1;* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R3;* Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A5;* Lockport, N. Y., *S4;* Canton, O., *T5;* Ft. Wayne, *I4.*

Wire: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Harrison, N. J., *D3;* Baltimore, *A7;* Dunkirk, *A3;* Monessen, *P1;* Syracuse, *C11;* Bridgeville, *U2.*

Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11.*

Plates: Brackenridge, Pa., *A3;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Lockport, N. Y., *S4;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R3;* Coatesville, Pa., *C15.*

Forged discs, die blocks, rings: Pittsburgh, *C11;* Syracuse, *C11;* Ferndale, Mich., *A3;* Washington, Pa., *J2.*

Forging billets: Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R3;* Watervliet, *A3;* Pittsburgh, Chicago, *U1;* Syracuse, *C11.*

Just as a catcher needs protection . . .

IRON and STEEL
***Need* PROTECTION**

If your product is made of iron or steel, and exposed to the elements, protect it against the ravages of rust by Hot-Dip Galvanizing — the best possible rust preventive when applied by Hanlon-Gregory. For longer life, greater uninterrupted service and substantial savings in maintenance, specify Hot-Dip Galvanizing . . . SEAL IT IN ZINC.

HANLON-GREGORY GALVANIZING COMPANY

Pittsburgh, Pennsylvania
The World's largest Job Galvanizing Plant

galvanizing . . . pickling . . . painting . . . oiling

IRON AGE

STEEL PRICES

(Effective Mar. 16, 1954)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PIL-ING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$82.00 *B3*		4.15 *B3*	6.20 *B3*	4.15 *B3*						
	Buffalo, N. Y.	$62.00 *B3*	$75.50 *B3, R3*	$82.00 *B3, R3*	4.925 *B3*	4.15 *B3*	6.20 *B3*	4.15 *B3*	3.925 *B3, R3*	5.45 *B3*	6.00 *B3*	8.425 *B3*		
	Claymont, Del.													
	Coatesville, Pa.													
	Conshohocken, Pa.								4.05 *A2*		5.90 *A2*			
	New Bedford, Mass.									6.00 *R6*				
	Harrison, N. J.													12.00 *C1*
	Johnstown, Pa.	$62.00 *B3*	$75.50 *B3*	$82.00 *B3*		4.15 *B3*	6.20 *B3*							
	Morrisville, Pa.													
	New Haven, Conn.									5.90 *D1* 6.20 *A5*				
	Phoenixville, Pa.					4.15 *P2*		4.95 *P2*						
	Sparrows Pt., Md.								3.925 *B3*	5.45 *B3*	6.00 *B3*	8.425 *B3*		
	Wallingford, Conn.									5.90 *W1*				
	Worcester, Mass.									6.30 *A5*				12.30 *A5* 12.45 *N7*
MIDDLE WEST	Alton, Ill.								4.10 *L1*					
	Ashland, Ky.								3.925 *A7*					
	Canton-Massillon, Dover, Ohio			$82.00 *R3, T5*										12.00 *G4*
	Chicago, Ill.	$62.00 *U1*	$75.50 *R3, U1, W8*	$82.00 *U1, W8, R3*	4.925 *U1*	4.10 *U1, W8*	6.175 *U1, Y1*	4.10 *U1*	3.925 *A1, W8*	5.70 *A1*	5.95 *R3*		6.40 *W8*	
	Sterling, Ill.													
	Cleveland, Ohio		$75.50 *R3*							5.45 *A5, J3*		7.80 *J3* 8.15 *A5*		12.00 *A5* 12.15 *N7*
	Detroit, Mich.			$84.00 *R5*					4.125 *G3* 4.15 *M2*	5.65 *D1, D2, G3, M2, P11*	6.15 *G3*	7.90 *D2* 8.35 *G3*		
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana	$62.00 *U1*	$75.50 *U1*	$82.00 *U1, Y1*	4.925 *I3*	4.10 *I3, U1*	6.175 *U1, I3*		3.925 *I3, U1, Y1*	5.70 *I3*	5.95 *U1, I3* 6.45 *Y1*		6.40 *U1*	
	Granite City, Ill.													
	Indianapolis, Ind.									5.60 *C5*				
	Mansfield, Ohio													
	Middletown, Ohio									5.45 *A7*				
	Niles, Warren, Ohio Sharon, Pa.								3.925 *S1*	5.45 *S1, T4*	5.95 *S1*	7.65 *S1*	6.40 *S1*	12.00 *S1*
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	$62.00 *U1, J3*	$75.50 *J3, U1*	$82.00 *U1, C11*	4.925 *U1*	4.10 *J3, U1*	6.175 *J3, U1*	4.10 *U1*	3.925 *A7, P6* 3.95 *S7* 4.425 *S9*	5.45 *B4, J3, S7*		7.80 *J3*	6.40 *S9* 6.45 *S7*	12.00 *S9* 12.15 *S7*
	Portsmouth, Ohio								3.925 *P7*					
	Weirton, Wheeling, Follansbee, W. Va.					4.10 *W3*			3.925 *W3*	5.45 *F3, W3*	5.95 *W3*	8.15 *W3*		
	Youngstown, Ohio			$82.00 *Y1, C10*		4.10 *Y1*	6.675 *Y1*		3.925 *R3, U1, Y1*	5.45 *R3, Y1, C5*	5.95 *U1, R3* 6.45 *Y1*	7.60 *R3* 8.30 *Y1*	6.40 *U1*	12.00 *C5*
WEST	Fontana, Cal.	$70.00 *K1*	$83.50 *K1*	$101.00 *K1*		4.75 *K1*	6.825 *K1*	5.10 *K1*	4.70 *K1*	7.35 *K1*	7.05 *K1*		7.80 *K1*	13.65 *K1*
	Geneva, Utah		$75.50 *C7*			4.10 *C7*	6.175 *C7*							
	Kansas City, Mo.					4.70 *S2*	6.775 *S2*		4.525 *S2*		6.55 *S2*		7.80 *S2*	
	Los Angeles, Torrance, Cal.		$85.00 *B2*	$102.00 *B2*		4.80 *B2, C7*	6.85 *B2*		4.675 *B2, C7*	7.50 *C1*			7.60 *B2*	
	Minnequa, Colo.					4.55 *C6*			5.025 *C6*					
	San Francisco, Niles, Pittsburg, Cal.		$85.00 *B2*			4.75 *B2* 4.91 *P9*	6.90 *B2*		4.675 *B2, C7*					
	Seattle, Wash.		$89.00 *B2, S11*			4.85 *B2*	6.90 *B2*							
SOUTH	Atlanta, Ga.								4.125 *A8*					
	Fairfield, Ala. Alabama City, Ala.	$62.00 *T2*	$75.50 *T2*			4.10 *R3, T2*	6.175 *T2*		3.925 *R3, T2*		5.95 *T2*			
	Houston, Tex.		$83.50 *S2*	$90.00 *S2*		4.50 *S2*			4.425 *S2*				6.80 *S2*	

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

STEEL PRICES

(Effective Mar. 16, 1954)

SHEETS									WIRE ROD	TINPLATE†		BLACK PLATE	
Hot-rolled *18* ga. & hvyr.	Cold-rolled	Galvanized *10* ga.	Enameling *12* ga.	Long Terne *10* ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot-rolled *19* ga.		Coke* *1.25*-lb. base box	Electro* *0.25*-lb. base box	Holloware Enameling *29* ga.	
													Bethlehem, Pa.
3.925 *B3*	4.775 *B3*				5.90 *B3*	7.225 *B3*			4.525 *W6*				Buffalo, N. Y.
										† Special coated mfg. terne deduct 95¢ from 1.25-lb coke base box price. Can-making quality blackplate 55 to 128 lb deduct $2.20 from 1.25-lb coke base box. * COKES: 1.50-lb add 25¢. ELECTRO: 0.50-lb add 25¢; 0.75-lb add 65¢.			Claymont, Del.
													Coatesville, Pa.
4.05 *A2*					5.90 *A2*								Conshohocken, Pa.
													Harrisburg, Pa.
													Hartford, Conn.
									4.525 *B3*				Johnstown, Pa.
4.025 *U1*	4.875 *U1*									$8.80 *U1*	$7.50 *U1*		Morrisville, Pa.
													New Haven, Conn.
													Phoenixville, Pa.
3.925 *B3*	4.775 *B3*	5.275 *B3*			5.90 *B3*	7.225 *B3*	8.075 *B3*		4.625 *B3*	$8.80 *B3*	$7.50 *B3*		Sparrows Pt., Md.
									4.825 *A5*				Worcester, Mass.
													Trenton, N. J.
									4.70 *L1*				Alton, Ill.
3.925 *A7*		5.275 *A7*	5.175 *A7*										Ashland, Ky.
		5.275 *R1, R3*						5.05 *R1*					Canton-Massillon, Dover, Ohio
3.925 *A1, W8*					5.90 *U1*				4.525 *A5, N4, R3*				Chicago, Joliet, Ill.
									4.625 *N4*				Sterling, Ill.
3.925 *J3, R3*	4.775 *J3, R3*		5.175 *R3*		5.90 *J3, R3*	7.225 *J3, R3*			4.525 *A5*				Cleveland, Ohio
4.125 *G3* 4.15 *M2*	4.975 *G3*				6.10 *G3*	7.425 *G3*							Detroit, Mich.
3.925 *N5*													Newport, Ky.
3.925 *I3, U1, Y1*	4.775 *I3, U1, Y1*	5.275 *U1, I3*	5.175 *I3, U1*	5.675 *U1*	5.90 *U1, I3* 6.40 *Y1*	7.225 *U1* 7.725 *Y1*				$8.70 *I3, U1, Y1*	$7.40 *I3, U1*	6.10 *U1, Y1*	Gary, Ind. Harbor, Indiana
4.125 *G2*	4.975 *G2*	5.475 *G2*	5.875 *G2*								$7.60 *G2*	6.30 *G2*	Granite City, Ill.
4.025 *C9*		5.375 *C9*						5.025 *C9*					Kokomo, Ind.
				5.675 *E2*				5.05 *E2*					Mansfield, Ohio
	4.775 *A7*		5.175 *A7*	5.675 *A7*									Middletown, Ohio
3.925 *S1* 5.175 *N3*	5.80 *N3*	5.275 *N3*	6.525 *N3*	5.45 *S1* 5.675 *N3*	5.90 *S1*						$7.40 *R3*		Niles, Ohio Sharon, Pa.
3.925 *J3, U1, P6, A7*	4.775 *J3, U1, P6*	5.275 *U1*	5.175 *U1*		5.90 *J3, U1*	7.22 *J3, U1*	7.925 *U1*		4.525 *A5* 4.725 *P6*	$8.70 *J3, U1*	$7.40 *J3, U1*	6.10 *U1*	Pittsburgh, Pa. Midland, Pa. Butler, Pa.
3.925 *P7*	4.775 *P7*								4.525 *P7*				Portsmouth, Ohio
3.925 *W3, W5*	4.775 *W3, W5, F3*	5.275 *W3, W5*		5.675 *W3, W5*	5.90 *W3*	7.225 *W3*				$8.70 *W3, W5*	$7.40 *W3, W5*	6.10 *F3, W5*	Weirton, Wheeling, Follansbee, W. Va.
3.925 *R3, U1, Y1*	4.775 *R3, Y1*		5.175 *Y1*		5.90 *U1, R3* 6.40 *Y1*	7.225 *R3* 7.725 *Y1*			4.525 *Y1*	$8.70 *R3*			Youngstown, Ohio
4.70 *K1*	5.875 *K1*				6.675 *K1*	8.275 *K1*			5.325 *K1*				Fontana, Cal.
4.025 *C7*													Geneva, Utah
								4.775 *C6*	4.865 *S2*				Kansas City, Mo.
4.625 *C7*		6.275 *C7*							5.325 *B2*				Los Angeles, Torrance, Cal.
									4.775 *C6*				Minnequa, Colo.
4.625 *C7*	5.725 *C7*	6.025 *C7*							5.175 *C7*	$9.45 *C7*	$8.15 *C7*		San Francisco, Niles, Pittsburg, Cal.
													Seattle, Wash.
													Atlanta, Ga.
3.925 *R3, T2*	4.775 *T2*	5.275 *R3, T2*			5.90 *T2*			5.125 *T2* 5.225 *R3*	4.525 *T2 R3*	$8.80 *T2*	$7.50 *T2*		Fairfield, Ala. Alabama City, Ala.
4.325 *S2*									4.925 *S2*				Houston, Texas

IRON AGE

STEEL PRICES

(Effective Mar. 16, 1954)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfg'rs. Bright
EAST	Bethlehem, Pa.				4.875 *B3*	6.325 *B3*	6.225 *B3*					
	Buffalo, N. Y.	4.15 *B3* 4.18 *R3*	4.15 *B3,R3*	5.25 *B5*	4.875 *B3,R3*	6.325 *B3,B5*	6.225 *B3*	4.10 *B3*			6.25 *B3*	5.525 *W6*
	Claymont, Del.							4.10 *C4*		5.55 *C4*		
	Coatesville, Pa.							4.10 *L4*		5.55 *L4*		
	Conshohocken, Pa.							4.10 *A2*	5.15 *A2*		6.25 *A2*	
	Harrisburg, Pa.							4.10 *C3*	5.15 *C3*			
	Hartford, Conn.			5.75 *R3*		6.775 *R3*						
	Johnstown, Pa.	4.15 *B3*	4.15 *B3*		4.875 *B3*		6.225 *B3*	4.10 *B3*		5.55 *B3*	6.25 *B3*	5.525 *B3*
	Morrisville, Pa.	4.30 *U1*	4.30 *U1*		5.025 *U1*							
	Newark, N. J.			5.65 *W10*		6.65 *W10*						
	New Haven, Conn.											
	Camden, N. J.			5.65 *P10*		6.50 *P10*						
	Putnam, Conn.			5.75 *W10*								
	Sparrows Pt., Md.		4.15 *B3*					4.10 *B3*		5.55 *B3*	6.25 *B3*	5.625 *B3*
	Palmer, Worcester, Mansfield, Mass.			5.75 *B5* 6.10 *W11*		6.775 *B5*						5.825 *A5, W6*
	Readville, Mass.			5.75 *C14*								
MIDDLE WEST	Alton, Ill.	4.35 *L1*										5.70 *L1*
	Ashland, Ky.							4.10 *A7*				
	Canton-Massillon, Ohio			5.20 *R2,R3*	4.875 *R3,T5*	6.325 *R2,R3, T5*						
	Chicago, Joliet, Ill.	4.15 *U1, N4,W8* 4.22 *R3*	4.15 *R3,N4*	5.20 *A5,W10, W8,B5,L2*	4.875 *U1, W8,R3*	6.325 *A5,W8, W10,L2, R3,B5*		4.10 *U1,W8*	5.15 *U1*	5.55 *U1*	6.25 *U1*	5.525 *A1, R3,N4,W7*
	Cleveland, Ohio	4.21 *R3*	4.15 *R3*	5.20 *A5,C13*		6.325 *A5, C13*		4.10 *J3,R3*	5.15 *J3*		6.25 *J3*	5.525 *A5, R3,C13*
	Detroit, Mich.	4.30 *R5* 4.35 *G3*		5.35 *R5,P8* 5.40 *B5* 5.45 *P3*	4.975 *R5* 5.075 *G3*	6.425 *R5* 6.475 *P8* 6.525 *B5,P3*	6.425 *G3*	4.30 *G3*			6.45 *G3*	
	Duluth, Minn.											5.525 *A5*
	Gary, Ind. Harbor, Crawfordsville	4.15 *I3, U1, Y1*	4.15 *I3, U1, Y1*	5.20 *R3*	4.875 *I3, U1, Y1*	6.325 *R3,M5*	6.225 *U1,I3* 6.725 *Y1*	4.10 *I3, U1, Y1*	5.15 *I3*	5.55 *U1*	6.25 *U1,I3* 6.75 *Y1*	5.625 *M4*
	Granite City, Ill.							4.30 *G2*				
	Kokomo, Ind.											5.625 *C9*
	Sterling, Ill.	4.25 *N4*	4.25 *N4*									5.625 *N4*
	Niles, Ohio Sharon, Pa.							4.10 *S1*		5.55 *S1*	6.25 *S1*	
	Pittsburgh, Pa. Midland, Pa.	4.15 *J3, U1*	4.15 *J3, U1*	5.20 *A5,J3, W10,R3,C8*	4.875 *U1,C11*	6.325 *A5,C11, W10,C8*	6.225 *J3, U1*	4.10 *J3, U1*	5.15 *U1*	5.55 *U1*	6.25 *J3, U1*	5.525 *A5, J3,P6*
	Portsmouth, Ohio											5.525 *P1*
	Weirton, Wheeling, Follansbee, W. Va.	4.15 *W3*						4.10 *W3*				
	Youngstown, Ohio	4.15 *U1,Y1* 4.20 *R3*	4.15 *R3, U1, Y1*	5.20 *Y1,F2*	4.875 *U1,Y1, C10*	6.325 *Y1, C10,F2*	6.225 *U1* 6.725 *Y1*	4.10 *R3, U1, Y1*			6.75 *Y1*	5.525 *Y1*
WEST	Emeryville, Cal.	4.90 *J5*	4.90 *J5*									
	Fontana, Cal.	4.85 *K1*	4.85 *K1*		5.925 *K1*		7.475 *K1*	4.75 *K1*		6.60 *K1*	6.95 *K1*	
	Geneva, Utah							4.10 *C7*			6.25 *C7*	
	Kansas City, Mo.	4.75 *S2*	4.85 *S2*		5.475 *S2*		6.825 *S2*					6.125 *S2*
	Los Angeles, Torrance, Cal.	4.85 *B2,C7*	4.85 *B2,C7*	6.65 *R3*	5.925 *B2*		6.925 *B2*					6.475 *B2*
	Minnequa, Colo.	4.60 *C6*	4.75 *C6*					4.95 *C6*				5.775 *C6*
	Portland, Ore.	4.90 *O2*										
	San Francisco, Niles, Pittsburg, Cal.	4.85 *C7,P9* 4.90 *B2*	4.85 *C7,P9* 4.90 *B2*				6.975 *B2*					6.475 *C7*
	Seattle, Wash.	4.90 *B2,N6*	4.90 *B2,S11*				6.975 *B2*	5.00 *B2*			7.15 *B2*	
SOUTH	Atlanta, Ga.	4.35 *A8*	4.35 *A8*									5.725 *A8*
	Fairfield, Ala. Alabama City, Ala.	4.15 *T2* 4.18 *R3*	4.15 *R3,T2*				6.225 *T2*	4.10 *R3,T2*			6.25 *T2*	5.525 *R3, T2*
	Houston, Ft. Worth, Lone Star, Tex.	4.55 *S2*	4.55 *S2*		5.275 *S2*			4.50 *L3, S2*				5.925 *S2*

Steel Prices

(Effective Mar. 16, 1954)

Key to Steel Producers

With Principal Offices

A1 Acme Stee Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angell Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, O.
A8 Atlantic Steel Co., Atlanta, Ga.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Products Dept., Claymont, Del.
C5 Cold Metal Products Co., Youngstown
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, New York
C12 Cumberland Steel Co., Cumberland, Md.
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.

D1 Detroit Steel Corp., Detroit
D2 Detroit Tube & Steel Div., Detroit
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire Steel Co., Mansfield, O.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimmons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G1 Globe Iron Co., Jackson, O.
G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Cal.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid-States Steel & Wire Co., Crawfordsville, Ind.
M5 Monarch Steel Co., Inc., Hammond, Ind.
M6 Mystic Iron Works, Everett, Mass.

N1 National Supply Co., Pittsburgh
N2 National Tube Co., Pittsburgh
N3 Niles Rolling Mill Div., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N5 Newport Steel Corp., Newport, Ky.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit

R1 Reeves Steel & Mfg. Co., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Rotary Electric Steel Co., Detroit
R6 Rodney Metals, Inc., New Bedford, Mass.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Corp., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw & Steel Co., Fitchburg, Mass.
S5 Sloss Sheffield Steel & Iron Co., Birmingham
S6 Standard Forging Corp., Chicago
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Corp., Carnegie, Pa.
S10 Sweet's Steel Co., Williamsport, Pa.
S11 Seidelhuber Steel Rolling Mills, Seattle

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T6 Tremont Nail Co., Wareham, Mass.
T7 Texas Steel Co., Fort Worth

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Fred Ulbrich & Sons, Wallingford, Conn.

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Co., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W11 Worcester Pressed Steel Co., Worcester, Mass.

Y1 Youngstown Sheet & Tube Co., Youngstown

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½–3 In.		2 In.		2½ In.		3 In.		3½–4 In.	
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
STANDARD T. & C.																						
Sparrows Pt. *B3*	24.25	8.0	27.25	12.0	29.75	15.5	32.25	16.5	32.75	17.5	33.25	18.0	34.75	18.0								
Youngstown *R3*	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0								
Fontana *K1*	13.25	+2.0	16.25	1.0	18.75	4.5	21.25	5.5	21.75	6.5	22.25	7.0	23.75	7.0								
Pittsburgh *J3*	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5
Alton, Ill. *L1*	24.25	8.0	27.25	12.0	29.75	15.5	32.25	16.5	32.75	17.5	33.25	18.0	34.75	18.0								
Sharon *M3*	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0								
Morrisville *N2*	24.25		27.25		29.75		32.25		32.75		33.25		34.75									
Pittsburgh *N1*	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5
Wheeling *W5*	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0								
Wheatland *W4*	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0								
Youngstown *Y1*	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5
Indiana Harbor *Y1*	25.25	9.0	28.25	13.0	30.75	16.5	33.25	17.5	33.75	18.5	34.25	19.0	35.75	19.0								
Lorain *N2*	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	27.75	13.0	31.75	17.0	33.75	20.5	34.25	19.5	34.75	20.5	35.25	21.0	35.75	20.0								
Youngstown *R3*	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0								
Fontana *K1*	16.75		20.75		22.75		23.25		23.75		24.25		24.75									
Pittsburgh *J3*	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75
Alton, Ill. *L1*	27.75	13.0	31.75	17.0	33.75	20.5	34.25	19.5	34.75	20.5	35.25	21.0	35.75	20.0								
Sharon *M3*	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0								
Pittsburgh *N1*	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75
Wheeling *W5*	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0								
Wheatland *W4*	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0								
Youngstown *Y1*	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75
Indiana Harbor *Y1*	28.75	14.0	32.75	18.0	34.75	21.5	35.25	20.5	35.75	21.5	36.25	22.0	36.75	21.0								
Lorain *N2*	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75

Galvanized discounts based on zinc, at 11¢ per lb, East St. Louis. For each 1¢ change in zinc, discounts vary as follows: ½ in., ¾ in., and 1 in., 1 pt.; 1¼ in., 1½ in., 2 in., ¾ pt.; 2½ in., 3 in., ½ pt. Calculate discounts on even cents per lb of zinc, i.e., if zinc is 16.51¢ to 17.50¢ per lb, use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢. Threads only buttweld and seamless, 2¼ pts. higher discount. Plain ends, buttweld and seamless, 3 in. and under, 4½ pts. higher discount. Buttweld jobbers' discount, 5 pct. East St. Louis zinc price now 9.25¢.

Steel Prices

(Effective Mar. 16, 1954)

To identify producers, see Key on preceding page.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts, Treated
Bessemer *U1*	4.325	5.20	5.275	.....	.....	.....	.....
Chicago *R3*	.....	.....	.....	7.05	.....	.....	.....
Cleveland *R3*	.....	.....	.....	.....	.....	.....	.....
Ensley *T2*	4.325	5.20	.....	.....	.....	.....	.....
Fairfield *T2*	.....	5.20	.....	7.05	.....	5.125	.....
Gary *U1*	4.325	5.20	.....	.....	.....	5.125	.....
Ind. Harbor *I3*	4.325	.....	5.275	7.05	.....	5.125	.....
Johnstown *B3*	.....	5.20	.....	.....	.....	.....	.....
Joliet *U1*	.....	5.20	5.275	.....	.....	.....	.....
Kansas City *S2*	.....	.....	.....	7.30	.....	.....	11.00
Lackawanna *B3*	4.325	5.20	5.275	.....	.....	5.125	.....
Lebanon *B3*	.....	.....	.....	7.05	10.50	.....	11.00
Minnequa *C6*	4.325	5.70	5.275	7.05	.....	5.125	11.00
Pittsburgh *O1*	.....	.....	.....	.....	10.50	.....	11.00
Pittsburgh *P5*	.....	.....	.....	.....	10.50	.....	11.00
Pittsburgh *J3*	.....	.....	.....	7.05	.....	.....	.....
Pitt'g, Cal. *C7*	.....	.....	.....	.....	.....	5.275	.....
Seattle *B7*	.....	.....	.....	7.55	.....	5.275	11.50
Steelton *B3*	4.325	.....	5.275	.....	.....	5.125	.....
Struthers *Y1*	.....	.....	.....	.....	.....	.....	.....
Torrance *C7*	.....	.....	.....	.....	.....	5.275	.....
Youngstown *R3*	.....	.....	.....	7.05	.....	.....	.....

ELECTRICAL SHEETS

22 Ga. H-R cut length F.o.b. Mill Cents Per Lb.	Armature	Elec.	Motor	Dynamo	Transf. 72	Transf. 65	Transf. 58
Beech Bottom *W5*	....	8.75	9.75	10.65	11.60	12.15	12.65
Brackenridge *A5*	....	8.75	9.75	10.65	11.60	.....	12.65
Granite City *G2*	8.60	9.20	10.20	.....	.....	.....	.....
Ind. Harbor *I3*	8.15	8.75	9.75	.....	.....	.....	.....
Manfield *E2*	8.15	8.75	9.75	10.65	.....	.....	.....
Newport, Ky. *N5*	8.15	8.75	9.75	10.65	11.60	.....	.....
Niles, O. *N3*	8.15	8.75	9.75	.....	.....	.....	.....
Vandergrift *U1*	8.15	8.75	9.75	10.65	11.60	12.15	12.65
Warren, O. *R3*	8.15	8.75	9.75	.....	.....	.....	.....
Zanesville *A7*	8.15	8.75	9.75	10.65	11.60	12.15	12.65

CLAD STEEL

	Plate	Sheet
Stainless-carbon		
No. 304, 20 pct.		
Coatesville, Pa., *L4*	*32.7	
Washington, Pa., *J2*	....	
Claymont, Del., *C4*	....	
New Castle, Ind., *I2*	....	32.50
Nickel-carbon		
10 pct. Coatesville, Pa., *L4*	37.5	
Inconel-carbon		
10 pct. Coatesville, Pa., *L4*	46.10	
Monel-carbon		
10 pct. Coatesville, Pa., *L4*	38.90	

* Includes annealing and pickling, sandblasting.

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nails	Woven Wire Fence 9-15½ ga.	"T" Fence Posts	Single Loop Bale Ties	Twisted Barbless Wire	Galv. Barbed Wire	Merch. Wire Ann'ld ¢/lb.	Merch. Wire* Galv. ¢/lb.
	Col	Col	Col	Col	Col	Col		
Alabama City *R3*	131	140	...	149	...	153	6.675	7.075
Aliquippa, Pa. *J3*	131	143	...	...	...	150	6.675	7.20
Atlanta *A8*	133	145	...	151	...	158	6.775	7.30
Bartonville *K2*	133	144	...	...	...	157	6.775	7.275
Buffalo *W6*	.....	.....	.....	.....	.....	.....	.....	.....
Chicago, Ill. *N4*	131	142	...	149	155	155	6.675	7.175
Cleveland *A6*	137	.....	.....	.....	.....	.....	.....	.....
Cleveland *A5*	.....	.....	.....	.....	.....	.....	6.675	.....
Crawfrdsvl. *M4*	133	145	...	151	...	153	6.775	7.325
Donora, Pa. *A5*	131	140	...	149	...	153	6.675	7.075
Duluth *A5*	131	140	145	149	...	153	6.675	7.075
Fairfield, Ala. *T2*	131	140	...	149	...	153	6.675	7.075
Galveston *D4*	139	148	...	...	...	...	.....	.....
Houston *S2*	139	151	...	...	...	164	7.075	7.625
Johnstn., Pa. *B3*	131	143	145	...	156	156	6.675	7.225
Joliet, Ill. *A5*	131	140	...	149	...	153	6.675	7.075
Kokomo, Ind. *C9*	133	142	...	151	...	155	6.775	7.175
Los Angeles *B2*	.....	.....	.....	.....	.....	.....	7.625	.....
Kansas City *S2*	143	155	...	161	...	168	7.275	7.825
Minnequa *C6*	136	148	150	154	162	162	6.925	7.325
Monessen *P6*	131	145	...	...	...	157	6.675	7.225
Moline, Ill. *R3*	.....	.....	145	.....	.....	.....	.....	.....
Pittsburg, Cal. *C7*	150	163	...	173	173	173	7.625	8.025
Portsmouth *P7*	.....	.....	.....	.....	.....	.....	6.675	.....
Rankin, Pa. *A5*	131	140	...	...	...	153	6.675	7.075
So. Chicago *R3*	131	140	145	149	...	153	6.675	7.075
S. San Fran. *C6*	.....	.....	.....	.....	.....	173	.....	.....
Sparrows Pt. *B3*	133	.....	.....	151	158	158	6.775	7.325
Struthers, O. *Y1*	.....	.....	.....	.....	.....	.....	6.675	7.175
Worcester *A5*	137	.....	.....	.....	.....	.....	6.975	.....
Williamsport, Pa. *S10*	133	.....	158	.....	.....	.....	.....	.....

Cut Nails, carloads, base $8.00 per keg (less 20¢ to jobbers), at Conshohocken, Pa. (*A2*).

* Alabama City and So. Chicago don't include zinc extra. Galvanized products computed with zinc at 11.0¢ per lb.

WAREHOUSES

Base price, f.o.b., dollars per 100 lb.

Cities	City Delivery Charge	Sheets: Hot-Rolled	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)	Strip: Hot-Rolled	Strip: Cold-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled	Bars: Cold-Finished	Alloy Bars: Hot-Rolled A 4615 As rolled	Alloy Bars: Hot-Rolled A 4140 Annealed	Alloy Bars: Cold-Drawn A 4615 As rolled	Alloy Bars: Cold-Drawn A 4140 Annealed
Baltimore	$.20	6.20	7.64	7.78	7.00	.....	6.85	6.98	6.86	8.17	.....	.....	.....	.....
Birmingham	.15	6.15	7.00	8.00[4]	6.30	.....	6.35	6.35	6.15	8.75	.....	.....	.....	.....
Boston	.20	6.89	7.83	9.18	7.13	9.23–9.35[2]	7.13	7.06	6.87	8.35	.....	12.05	.....	14.50
Buffalo	.20	6.20–6.35	7.15–7.70	8.85–9.01	6.65–6.79	.....	6.65–6.68	6.55–6.59	6.35	7.70	.....	11.95	.....	14.25
Chicago	.20	6.18	7.12	8.15	6.42	.....	6.33–6.38	6.46	6.28	7.30	.....	11.75	.....	14.25
Cincinnati	.15	6.51	7.19	8.10	6.72	.....	6.80	6.93	6.58	7.66	.....	12.17	.....	14.87
Cleveland	.20	6.18	7.12	7.90	6.58	.....	6.50	6.79	6.34	7.40	.....	11.89	.....	14.39
Denver	.....	7.95	8.85	10.47	8.20	9.55	7.95	7.95	8.05	9.05	.....	16.05	.....	15.75
Detroit	.20	6.35–6.45	7.29–7.31	8.42	6.69–7.71	7.36	6.80	6.91–6.93	6.56	7.60	12.47	11.92	14.42	13.44–14.62
Houston	.20	7.15	7.60–7.85	9.40	7.45	.....	7.20	7.35	7.45	9.30	.....	12.95	.....	.....
Kansas City	.20	6.85	7.79	8.67	7.09	.....	7.00–7.05	7.13	6.95	8.08	.....	12.42	.....	.....
Los Angeles	.20	7.25	9.00	9.70	7.55	10.75–11.30	7.20	7.35	7.15–7.25	9.10–9.75	13.20	13.05	15.75	15.85–16.05
Memphis	.10	6.79	7.69	.....	6.90	.....	7.01	7.09	6.88	7.89–8.31	.....	.....	.....	.....
Milwaukee	.20	6.35	7.12	8.00–8.32	6.59–6.60	8.07	6.50–6.55	6.61–6.63	6.45	7.57	.....	11.92	.....	14.42
New Orleans	.15	6.51	7.41	9.32	6.63	10.42	6.73	6.81–7.45	6.60	8.42–10.42	.....	.....	.....	.....
New York	.30	6.78	7.75[6]–8.20	8.42–8.67[3]	7.16	9.05	6.99	6.90	7.06	8.43	12.29	12.14	14.54	14.64
Norfolk	.20	6.90	.....	.....	7.20	.....	7.15	7.20	7.20	8.50	.....	.....	.....	.....
Philadelphia	.25	6.60	7.38	8.15	7.02	.....	6.63	6.67	6.87	8.24	12.04	11.89	14.29	14.39
Pittsburgh	.20	6.18	7.12	8.00	6.55	.....	6.33	6.46	6.28	7.65	.....	11.75	.....	14.25
Portland	.10	7.90	8.45	9.15	7.65	.....	7.30	7.25	7.35	10.65	.....	.....	.....	.....
Salt Lake City	.20	9.05	10.80	10.65	9.35	11.25	8.70	8.85	9.10–9.20	11.25	.....	.....	.....	.....
San Francisco	.20	7.35	8.70	9.50–10.15	7.60	10.35	7.20	7.25	7.15	9.75–9.85	13.20	12.80–13.05	15.50	15.55–16.05
Seattle	.20	8.15	9.50	9.80	8.00	.....	7.60	7.50	7.60	10.65	.....	13.40	.....	16.00
St. Louis	.20	6.48	7.42	8.45	6.72	8.47	6.73	6.86	6.58	7.50–7.70	12.20	12.05	12.20	14.55
St. Paul	.15	6.84	7.78	8.66	7.08	.....	6.99	7.12	6.94	8.06	.....	12.42	.....	.....

Base Quantities (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over. Alloy bars; 1000 to 1999 lb. All others; 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity.

Exceptions: (1)500 to 1499 lb. (2)20,000 lb or over. (3)450 to 1499 lb. (4)500 to 9999 lb. (5)1000 lb or over. (6)400 to 1499 lb.

C-R SPRING STEEL

Cents Per Lb. F.o.b. Mill	CARBON CONTENT 0.26–0.40	0.41–0.60	0.61–0.80	0.81–1.05	1.06–1.35
Bridgeport, Conn. *S7**	5.75	7.65	8.60	10.55	12.85
Carnegie, Pa. *S9*	.....	7.65	8.60	10.55	12.85
Cleveland *A5*	5.45	7.65	8.60	10.55	12.85
Detroit *D1*	5.65	7.85	8.45	10.55	.....
Detroit *D2*	5.65	7.85	8.80	.....	.....
Harrison, N. J. *C11*	.....	.....	8.90	10.85	13.15
Indianapolis *C5*	5.60	7.80	8.60	10.55	.....
New Castle, Pa. *B4*	5.80	8.00	8.60	.....	.....
New Haven, Conn. *D1*	5.90	7.95	8.55	10.65	.....
Riverdale, Ill. *A1*	5.70	7.80	8.75	10.70	13.00
Sharon, Pa. *S1*	5.45	7.65	8.60	10.55	12.85
Trenton *R4*	.....	7.95	8.90	10.85	13.15
Wallingford *W1*	6.20	7.95	8.90	10.85	13.15
Warren, Ohio *T4*	5.45	7.65	8.60	10.55	12.85
Weirton, W. Va. *W3*	5.45	7.65	8.60	10.55	12.85
Worcester, Mass. *A5*	6.30	7.95	8.90	10.85	13.15
Youngstown *C5*	5.45	7.65	8.60	10.55	.....

* Sold on Pittsburgh base.

BOILER TUBES

$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size: OD-In.	Size: B.W. Ga.	Seamless: H.R.	Seamless: C.D.	Elec. Weld: H.R.	Elec. Weld: C.D.
Babcock & Wilcox	2	13	27.34	32.98	26.51	31.98
	2½	12	36.82	44.41	35.70	43.07
	3	12	42.52	51.28	41.23	49.73
	3½	11	49.63	59.87	48.13	58.06
	4	10	65.91	79.50	63.92	77.10
National Tube	2	13	.....	32.98	26.51	.....
	2½	12	36.82	44.41	35.70	.....
	3	12	42.52	51.28	41.23	.....
	3½	11	49.63	59.87	48.13	.....
	4	10	65.91	79.50	63.92	.....
Pittsburgh Steel	2	13	27.34	32.98	.....	.....
	2½	12	36.82	44.41	.....	.....
	3	12	42.52	51.28	.....	.....
	3½	11	49.63	59.87	.....	.....
	4	10	65.91	79.50	.....	.....

Miscellaneous Prices

(Effective Mar. 16, 1954)

TOOL STEEL

F.o.b. Mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	$1.48
18	4	1	—	5	2.16
18	4	2	—	—	1.64
1.5	4	1.5	8	—	.895
6	4	2	6	—	1.005

High-carbon chromium ..... .70
Oil hardened manganese ..... .39
Special carbon ..... .355
Extra carbon ..... .30
Regular carbon ..... .25

Warehouse prices on and east of Mississippi are 3.5¢ per lb. higher. West of Mississippi, 5.5¢ higher.

CAST IRON WATER PIPE

Per Net Ton

6 to 24-in., del'd Chicago $111.80 to $115.30
6 to 24-in., del'd N. Y. .. 115.00 to 116.00
6 to 24-in., Birmingham 98.00 to 102.50
6-in. and larger f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipments less .....$129.50 to $131.50

Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

LAKE SUPERIOR ORES

51.50% Fe; natural content, delivered lower Lake ports. Prices effective July 1, 1953, to end of 1954 season.

Gross Ton

Openhearth lump $11.15
Old range, bessemer 10.30
Old range, nonbessemer 10.15
Mesabi, bessemer 10.05
Mesabi, nonbessemer 9.90
High phosphorus 9.90

Prices based on upper Lakes rail freight rates, Lake vessel freight rates, handling and unloading charges, and taxes thereon, in effect on June 24, 1953. Increases or decreases after such date are for buyer's account.

COKE

Furnace, beehive (f.o.b. oven) Net-Ton
Connellsville, Pa. .....$14.25 to $14.50
Foundry, beehive (f.o.b. oven)
Connellsville, Pa. .....$16.50 to $17.00
Foundry, oven coke
Buffalo, del'd $28.08
Chicago, f.o.b. 24.50
Detroit, f.o.b. 25.50
New England, del'd 26.05
Seaboard, N. J., f.o.b. 24.00
Philadelphia, f.o.b. 23.95
Swedeland, Pa., f.o.b. 23.85
Painesville, Ohio, f.o.b. 24.00
Erie, Pa., f.o.b. 25.00
Cleveland, del'd 27.43
Cincinnati, del'd 26.56
St. Paul, f.o.b. 23.75
St. Louis, f.o.b. 26.00
Birmingham, f.o.b. 22.65
Lone Star, Tex., f.o.b. 18.50

ELECTRODES

Cents per lb, f.o.b. plant threaded electrodes with nipples, unboxed

Diam. in in.	Length in in.	Cents Per lb.
	GRAPHITE	
24	84	20.50
20	72	20.00
12, 14, 18	72	20.50
7 to 10	60	21.00
6	60	23.25
4	40	26.00
3	40	27.25
2½	30	28.00
2	24	43.50
	CARBON	
40	100, 110	8.95
35	110	8.95
30	110	8.95
24	72 to 84	9.10
20	90	8.95
17	72	9.10
14	72	9.50
10, 12	60	10.30
8	60	10.55

BOLTS, NUTS, RIVETS, SCREWS

Consumer Prices

(Base, discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

Nuts, Hot Pressed, Cold Punched—Sq.

	Pct Off List Less Keg Reg.	K.	Less Keg Hvy.	K.
½ in. & smaller	+2	15	+2	18
9/16 in. & ⅝ in.	+7	11	+32*	+10*
¾ in. to 1½ in. inclusive	+8	10	+27**	+6**
1⅝ in. & larger	+9	9	+27	+6

* 9/16 to ¾ in.
** ⅞ to 1½ in.

Nuts, Hot Pressed—Hexagon

½ in. & smaller	11	26	8	23
9/16 in. & ⅝ in.	2	18	+20	net
¾ in. to 1½ in. inclusive	+6	12	+25	+4
1⅝ in. & larger	+8	10	+25	+4

Nuts, Cold Punched—Hexagon

½ in. & smaller	11	26	8	23
9/16 in. & ⅝ in.	9	24	+2	15
¾ in. to 1½ in. inclusive	+1	16	+9	9
1⅝ in. & larger	+16	3	+20	net

Nuts, Semi-Finished—Hexagon

½ in. & smaller	23	36	14	28
9/16 in. & ⅝ in.	18	32	4	20
¾ in. to 1½ in. inclusive	8	23	+8	10
1⅝ in. & larger	+14	5	+20	net

	Light	
7/16 in. & smaller	33	43
½ in. thru ⅝ in.	26	37
¾ in. to 1½ in. inclusive	18	30

Stove Bolts *Pct Off List*

Packaged, steel, plain finished 44½—10
Packaged, plain finish ..... 25½—10
Bulk, plain finish** 59*

*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

**Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

Rivets *Base per 100 lb*

½ in. & larger $8.90
Pct Off List
7/16 in. and smaller 30

Cap and Set Screws

(In bulk) *Pct Off List*

Hexagon head cap screws, coarse or fine thread, ¼ in. thru ⅝ in. x 6 in., SAE 1020, bright 40
¾ in. thru 1 in up to & including 6 in. 26
¼ in. thru ⅝ in. x 6 in. & shorter high C double heat treat 43
¾ in. thru 1 in up to & including 6 in. 33
Milled studs 17
Flat head cap screws, listed sizes ... 12
Fillister head cap, listed sizes 7
Set screws, sq head, cup point, 1 in. diam. and smaller x 6 in. & shorter 37

Machine and Carriage Bolts

	Pct Off List Less Case	C.
½ in. & smaller x 6 in. & shorter	4	20
9/16 in. & ⅝ in. x 6 in. & shorter	5	21
¾ in. & larger x 6 in. & shorter	3	19
All diam. longer than 6 in...	+4	13
Lag, all diam. x 6 in. & shorter	12	27
Lag, all diam. longer than 6 in.	8	23
Plow bolts	30	..

REFRACTORIES

Fire Clay Brick *Carloads per 1000*

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5.00) ..$109.00
No. 1 Ohio 102.00
Sec. quality, Pa., Md., Ky., Mo., Ill. 102.00
No. 2 Ohio 93.00
Ground fire clay, net ton, bulk (except Salina, Pa. add $1.50) 16.00

Silica Brick

Mt. Union, Pa., Ensley, Ala. $115.00
Childs, Hays, Pa. 120.00
Chicago District 125.00
Western Utah 131.00
California 138.00
Super Duty
Hays, Pa., Athens, Tex., Windham 132.00
Curtner, Calif. 150.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.) 19.00
Silica cement, net ton, bulk, Hays, Pa. 21.00
Silica cement, net ton, bulk, Chicago District, Ensley, Ala. 20.00
Silica cement, net ton, bulk, Utah and Calif. 28.50

Chrome Brick *Per net ton*

Standard chemically bonded Balt.. $86.00
Standard chemically bonded, Curtner, Calif. 96.25
Burned, Balt. 80.00

Magnesite Brick

Standard Baltimore $109.00
Chemically bonded, Baltimore 97.50

Grain Magnesite *St. ⅝-in. grains*

Domestic, f.o.b. Baltimore in bulk fines removed $64.40
Domestic, f.o.b. Chewalah, Wash., Luning, Nev.
in bulk 38.00
in sacks 43.75

Dead Burned Dolomite *Per net ton*

F.o.b., bulk, producing points in:
Pa., W. Va., Ohio $14.50
Midwest 14.60
Missouri Valley 13.65

FLUORSPAR

Washed gravel, f.o.b. Rosiclaire, Ill.
Price, net ton; Effective CaF_2 content
72½% $44.00
70% or more 42.50
60% or less 38.00

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron, c.i.f. New York, ocean bags ... 11.25¢
Canadian sponge iron, del'd. in East ..... 12.0¢
Domestic sponge iron, 98+% Fe, carload lots ..... 18.0¢
Electrolytic iron, annealed, 99.5+% Fe ..... 44.0¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe 60.0¢
Hydrogen reduced iron minus 300 mesh, 98+% Fe..63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+% Fe..83.0¢ to $1.48
Aluminum ..... 31.5¢
Brass, 10 ton lots .....29.50¢ to 36.50¢
Copper, electrolytic ..... 43.50¢
Copper, reduced ..... 43.50¢
Cadmium, 100-199 lb 95¢ plus metal value
Chromium, electrolytic, 99% min., and quality, del'd... $3.60
Lead ..... 21.00¢
Manganese ..... 57.0¢
Molybdenum, 99% $2.75
Nickel, unannealed ..... 89.50¢
Nickel, annealed ..... 96.50¢
Nickel, spherical, unannealed 93.50¢
Silicon ..... 43.50¢
Solder powder..7.0¢ to 9.0¢ plus met. value
Stainless steel, 302 ..... 91.0¢
Stainless steel, 316 ..... $1.10
Tin .....14.04¢ plus metal value
Tungsten, 99% (65 mesh) .. $5.35
Zinc, 10 ton lots .....17.5¢ to 25.0¢

Ferroalloy Prices

(Effective Mar. 16, 1954)

Ferrochrome

Contract prices, cents per lb contained Cr, lump size, bulk, in carloads, delivered.

65-72 Cr, 2% max. Si.

0.025% C	34.50	0.20% C	33.50
0.06% C	34.50	0.50% C	33.25
0.10% C	34.00	1.00% C	33.00
0.15% C	33.75	2.00% C	32.75

65-69% Cr, 4.9% C 24.75
62-66% Cr, 4.6% C, 6-9% Si 25.60

S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60.65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads 25.85
Ton lots 28.00
Less ton lots 29.50

High-Nitrogen Ferrochrome

Low-carbon type 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 3¢ for each additional 0.25% of N.

Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C $1.18
0.50% max. C 1.14
9 to 11% C 1.11

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed, lump 4-in. x down, bulk 2-in. x down, 24.75¢ per lb of contained Cr plus 12.40¢ per lb of contained Si.

Bulk 1-in. x down, 24.90¢ per lb contained Cr plus 12.69¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, lump delivered.

30-33% Cr, 60-65% Si, 3.00 max. Fe.

Carloads 19.00
Ton lots 22.10
Less ton lots 23.60

Calcium-Manganese—Silicon

Contract prices, cents per lb of alloy lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads 20.00
Ton lots 22.30
Less ton lots 23.30

SMZ

Contract price. cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.

Ton lots 17.50
Less ton lots 19.50

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots 16.50
Less ton lots 17.75

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed 17.50
Ton lots to carload packed 18.50
Less ton lots 20.00

Ferromanganese

Maximum contract base price, f.o.b., lump size, base content 74 to 75 pct Mn:

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland Ore.	10.00
Clairton, Pa.	10.00
Sheridan, Pa.	10.00

Add or subtract 0.1¢ for each 1 pct Mn above or below base content.

Briquets, delivered, 66 pct Mn:

Carloads, bulk 12.50
Ton lots, packed 14.05

Spiegeleisen

Contract prices, per gross ton, lump, f.o.b. Palmerton, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$84.00
19 to 21%	3% max.	86.00
21 to 23%	3% max.	88.50
23 to 25%	3% max.	91.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed 36.95
Ton lots 38.45

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads 30.00
Ton lots 32.00
250 to 1999 lb 34.00
Less than 250 lb 37.00
Premium for hydrogen-removed metal 1.50

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn ..... 21.35¢

Low-Carb Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	30.00	31.85	33.05
0.07% max. C	27.95	29.80	31.00
0.15% max. C	27.45	29.30	30.50
0.30% max. C	26.95	28.80	30.00
0.50% max. C	26.45	28.30	29.50
0.75% max. C, 80-85% Mn, 5.0-7.0% Si	23.45	25.30	26.50

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢.

Carload bulk 11.40
Ton lots 13.05
Briquet contract basis carlots, bulk delivered, per lb of briquet 12.65
Ton lots, packed 14.25

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $92.00 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $89.50. Add $1.00 per ton for each additional 0.50% Si up to and including 17%. Add $1.45 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, packed.

	Ton Lots	Carloads
96% Si, 2% Fe	20.10	18.00
97% Si, 1% Fe	20.60	18.50

Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 2 lb Si briquets.

Carloads, bulk 6.95
Ton lots 8.55

Electric Ferrosilicon

Contract price, cents per lb contained Si, lump, bulk, carloads, delivered.

25% Si	20.00	75% Si	14.30
50% Si	12.40	85% Si	15.55
65% Si	13.60	90.95% Si	17.00

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
Less ton lots	2.40	3.30	4.55

Ferrovanadium

35-55% contract, basis, delivered, per pound, contained V.

Openhearth ..... $3.00-$3.10
Crucible 3.10- 3.20
High speed steel (Primos) .. 3.20- 3.25

Alsifer, 20% Al, 40% Si, 40% Fe,

contract basis f.o.b. Suspension Bridge, N. Y.

Carloads 9.90
Ton lots 11.30

Calcium molybdate, 46.3-46.6%

f.o.b Langeloth, Pa., per pound contained Mo $1.15

Ferrocolumbium, 50-60%, 2 in. x D contract basis, delivered per pound contained Cb.

Ton lots $9.50
Less ton lots 9.55

Ferro-Tantalum-Columbium, 20% Ta, 40% Cb, 0.30% C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta $4.75

Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo $1.32

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $4.00 unitage, per gross ton $90.00
10 tons to less carload $110.00

Ferrotitanium, 40% regular grade, 0.10% C max., f.o.b. Niagra Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots 1.55

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload, per net ton $177.00

Ferrotungsten, ¼ x down, packed, per pound contained W, ton lots, f.o.b. $3.80

Molybdic oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa. $1.14
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.13

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound

Carload, bulk lump ..... 14.50¢
Ton lots, bulk lump ..... 15.75¢
Less ton lots, lump ..... 16.25¢

Vanadium Pentoxide, 86-89% V_2O_5 contract basis, per pound Contained V_2O_5 ..... $1.25

Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.

Ton lots ..... 21.00¢

Zirconium, 12-15%, contract basis, lump delivered, per lb of alloy.

Carload, bulk ..... 8.00¢

Boron Agents

Borosil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B... $5.25

Bortam, f.o.b. Niagara Falls

Ton lots, per pound ..... 45¢
Less ton lots, per pound ... 50¢

Corbortam, Ti 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4-5-7.5% f.o.b. Suspension Bridge, N. Y., freight allowed.

Ton lots per pound ..... 10.00¢

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, Ton lots ... $1.30
F.o.b. Wash., Pa.; 100 lb up

10 to 14% B ..... .85
14 to 10% B 1.30
19% min. B 1.50

Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over

No. 1 ..... $1.00
No. 6 ..... 65¢
No. 79 ..... 50¢

Manganese-Boron, 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.

Ton lots $1.40
Less ton lots 1.67

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% Max C, 3.00% max. Fe, balance Ni, delivered

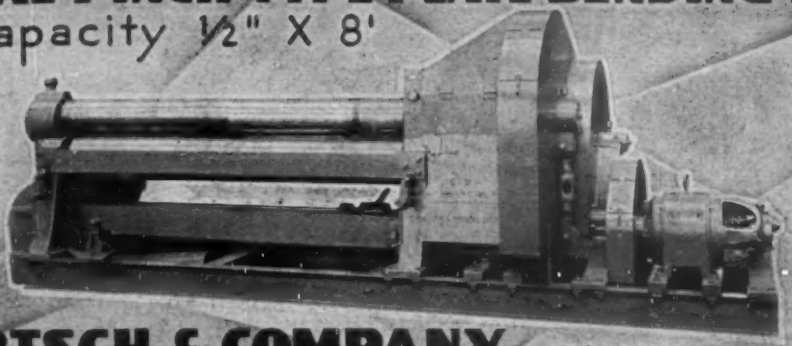
Less ton lots $2.05

Silcaz, contract basis, delivered

Ton lots ..... 45.00¢

INITIAL PINCH TYPE PLATE BENDING ROLL

Capacity ½" X 8'



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Light and heavy machinery for all classes of sheet metal, plate and structural work

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FOR TESTING
Screws, thread-cutting and thread-forming screws—all types of threaded fasteners; threaded parts and threaded connections.

FOR MANUFACTURERS
DESIGNERS
INSPECTORS
TOOL ENGINEERS
LABORATORIES and for
PRODUCT CONTROL
in assembly.

Capacities: (0-200 in. lbs.) or (0-150 ft. lbs.)

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ADDISON QUALITY ILLINOIS

YOUR RUTHMAN GUSHER COOLANT PUMP is

Illustrated is a Greaves 2H Universal Milling Machine equipped with a Gusher Coolant Pump—Courtesy Greaves Machine Tool Co. div. J.A. Fay & Egan Co., Cinti.

- **Compact**
- **Dependable**
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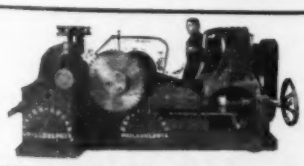
Your Gusher Coolant Pump is designed to give you maximum performance in minimum space. Pre-lubricated heavy-duty ball bearings, electronically balanced rotating shaft, with no metal to metal contact in the pump, assures you of dependable service and an absolute minimum of maintenance attention. Write for full information today.

THE RUTHMAN MACHINERY CO.
1809-1823 READING ROAD — CINCINNATI 2, OHIO



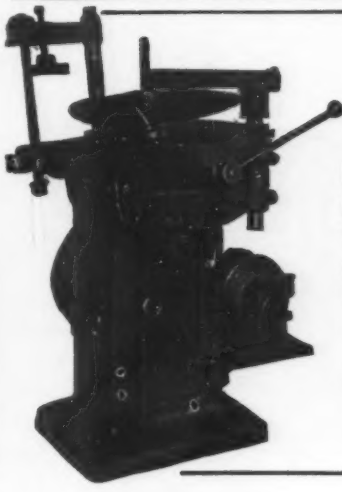
Cutting Off Machines for Sawing All Kinds of Metals

THE ESPEN-LUCAS MACHINE WORKS
FRONT AND GIRARD AVE., PHILADELPHIA, PENNA.

LELAND-GIFFORD

the BIG NAME in DRILLING MACHINES

LELAND-GIFFORD COMPANY, WORCESTER, MASSACHUSETTS



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Low in Cost. Durable. Easy to operate.
Table adjustable for straight or taper keyways.
Three sizes. Keyways 1/16" up to 1".

DAVIS KEYSEATER CO.
400 Exchange St.
Rochester 8, N. Y.

good machinery

REBUILT

to exacting standards

No. 2H KEARNEY & TRECKER Horizontal Mill, new 1945

No. 3-24 CINCINNATI Plain Hydromatic Mill, AC-MD

No. 4 CINCINNATI High Speed Dial Type Plain Horizontal Mill, 1943

No. 4CH KEARNEY & TRECKER Horizontal Mill, new 1951

16" x 78" centers PRATT & WHITNEY Toolroom Lathe, taper attachment, collets, chucks, 1943

27" x 12' centers LODGE & SHIPLEY Selective Geared Head Lathe, AC-MD

36" x 12' centers AMERICAN Heavy Duty 16 Speed Geared Head Lathe, AC-MD

No. 3A WARNER & SWASEY Turret Lathe, Timken Spindle, electric chuck, tooling

No. 3 WARNER & SWASEY Universal Turret Lathe, Serial 800,000, New 1944, two speed motor in base

42" BULLARD Spiral Drive Vertical Turret Lathe, extra high column

42" KING Vertical Boring Mill, 10HP AC motor, power rapid traverse

25A HEALD Rotary Surface Grinder, 24" diameter magnetic chuck, AC-MD

30" MORTON Hydraulic Keyseater, 1942

No. 6A MITTS & MERRILL Keyseater, capacity 0 to 4" width, 36" stroke, tooling

5'-13" column CARLTON Radial Drill, AC motor & gearbox on base

6'-17" column CINCINNATI BICKFORD Super Service Radial Drill, power rapid traverse, motor on arm

48" x 48" x 12' NILES Double Housing Planer, 2 rail heads, 1 side head, power rapid traverse

48" x 48" x 12' CINCINNATI Double Housing Planer, 2 rail heads, 2 side heads, power rapid traverse

We Can Arrange Time Payments or Rentals with Option to Purchase

O'Connell
MACHINERY CO.
of BUFFALO, n. y.
1693 GENESEE ST.

The Clearing House

NEWS OF USED AND REBUILT MACHINERY

Chicago's Business Variable . . . Though the general report from used machine tool men in the Midwest would indicate that business was in the doldrums, there were some excellent sales within the last 30 days. In other words, conditions aren't quite as bad as they seem.

The general business climate depends pretty much on your customer list. One firm reports difficulty in selling used machine tools, reports machines of vintage as late as the 1950's going at cost.

The old and small items, the $500 pieces, were moving at a very good clip but were acting to reduce the firm's profit margin. Heavier, bread-and-butter machines that were expected to keep profit at a reasonable operating level, were moving very slowly and off as much as 40 pct from the same period last year.

Another firm, on the other hand, knocked off a neat piece of business as the month opened, still finds itself with cash low and inventory of high cost machine tools high, but will probably regard February as a very fair month.

Very Little Leasing . . . At least a few general trends can be discerned, however. Leasing is gaining very little strength. The dealer finds that he can get along with very little leasing, and reports from the West Coast indicate that leasing of used machine tools can lead to knotty problems for any newcomer trying the plan for the first time. Local leasing is moving slowly.

It appears that in the Midwest, if price concessions become necessary, financing can be extended and down payments reduced. That isn't true of later model machine tools yet, but is reportedly growing in older model used tools.

There certainly is no cause for panic. A dealer can still ask for one-third down and get it without fighting, though on old model machine tools most dealers are tailoring their ticket to the particular tool.

The main point: if a customer doesn't want to buy he can't be lured out of cover with low pricing offers—if he does need a tool he'll take it from a supplier he's been doing business with in the past.

Prices May Get Firm . . . Despite reports of late model machine tools going at cost or even below, there is some feeling that prices may be beginning to firm again. Which again reflects the fact that, though everybody talks about a very bad first quarter, some really substantial sales are being made, and being made right now.

At least one source regards the "cash on hand" situation as being just as bad as it was in 1949, which nearly everybody along Machinery Row remembers as a year we could have done better without.

Most dealers feel that this is somewhat pessimistic, but agree that a little more cash on hand and a reduction of the inventory of older machines would be a good idea, and selling will be aimed in that direction.

Credit For Dealers . . . The capital-inventory problem is looming more important and will probably get considerable increased attention. At a recent meeting of the Chicago chapter of Machinery Dealers' National Assn. for instance, it was pointed out that credit for dealers who wish to bid on government surplus tools should be set up as it was under the old War Assets Administration arrangement.

A recognized dealer would be given credit, rather than tying up any amount of cash in machine tool bids that would move slowly, take months to return the unsuccessful bidder's cash to his pocket for a try in some other field.